

THE EFFECT OF PURPOSE ON THE
STUDY PROCESS

by

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Preface.

It is the purpose of this thesis to set forth the methods and the results of an investigation into the effects of a pupil's purpose on his selection and emphasis of material in the study process. It is a study in educational psychology and is an attempt to apply the scientific method to an inductive investigation of an educational problem.

The problem is basic in its character and is the underlying principle of the present trend of educational thought. Vocational subjects are being introduced into the curriculum because they are supposed to appeal to the student and arouse in him a purpose. Is this purpose a core about which all that is read, studied or taught will be organized or is the purpose only a main spring which impels the pupil to action? The results of the experiments at least suggest the answer,

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The Effects of purpose on the study process.

Introduction

Section 1.

Purpose and Education.

It has long been recognized in education that there is an intimate relation between purpose in the life of the pupil and the progress that the pupil makes in school. It is a noticable fact that the children of shiftless parents are apt to be shiftless in school and early drop out while children of well-to-do parents who have pride and ideals are as a rule more enthusiastic students and remain in school longer. In these cases purpose or lack of purpose is due to heredity and environment but the significant fact is, that purpose or lack of purpose has a marked influence on the efforts which the pupil makes toward securing an education.

Often in the lower grades artificial incentives will suffice to kindle an enthusiastic response in almost all pupils, in the upper grades and High School artificial incentives lose their charms. Then it is only the influence of a great and fixed purpose to be something or to do something, to uphold the family name and traditions or to be something or to do something

in spite of circumstances that offers a sufficient motive for sustained effort. Only such a motive will sustain the effort necessary to master the common and High School Courses of study to say nothing of the hard discipline necessary to master the courses of the college and the University.

Dr. Charles Elliot says (1):

"Teachers recognize the fact that if a pupil does his best it is because he has an active interest and cooperation of mind and will. In early school life the teacher uses every means to secure this co-operation but there comes a time when the boys lose interest and either drop out or dilly dally on. However there are schools that have no such difficulty, professional students, secondary students in High Schools of Commerce and Mechanical arts, Industrial Schools, Night schools and extension Schools of all kinds as well as such schools as Tuskegee and Hampton Institute are exempt. It is the motive of a life career which holds them to their purposes."

Here Dr. Elliot contends that the teacher in the upper grades is responsible not for an artificial incentive that may be held before the pupil but he is responsible for arousing in the pupil the incentive for of a life career motive. This is necessary if the school is to hold the pupil and prepare him for a place

(1) N.E.A. 1910, p. 133.

in life where he can be of the most service to humanity and get for himself the highest pleasure from such service. It recognizes the necessity for a great purpose in life if the pupil is to put forth strenuous efforts to attain that purpose.

The Hebartians (2) lay stress upon an aim or purpose in every lesson taught. At the beginning of the recitation the teacher is directed to hold in mind and to state to the pupils an aim, that the pupils may have an end toward which to drive. It is claimed that the values derived from the lesson depend upon such an aim, that the aim helps in the organization of material, it quickly centers the attention, and it help to give momentum early in the recitation.

Thus Dr. Elliot points out the importance which he attaches to a life career purpose while Dr. McMurry shows the importance of a purpose in every lesson.

The present trend of education is toward the vocational and the narrowly practical because it has been the contention of educators that a vocational motive is the strongest incentive to urge the child forward in his studies and farther that the vocational motive would have a marked influence on the selection and emphasis of values gotten from any course pursued.

(2) Methods of Recitation-McMurry pp. 105 ff.

If this be true the teacher should be made definitely aware of the precise effects on his pupils of a given purpose. Further more, he should know the different values gotten by the pupils when the purpose is general instead of specific. If it is possible to regulate the selection and emphasis of material by a purpose then the waste and tragedy of aimless teaching.

But suppose the school does enable the pupil to choose his life career at twelve, thirteen or fourteen years of age who should be aware of the pupils purpose, the pupil only, the teacher only or should both the teacher and pupil? If the teacher has in a single class pupils with many different aims will a general purpose on the part of the teacher be enough to enable the pupil to select the values that will be best suited to his ends?

Again quoting from Dr. Elliot, he says; (3):

"All adults do their best work in the world under the impulsion of the life career motive and so should students in school".

This places upon the school the necessity of helping students at the earliest possible moment to choose their vocation and with this vocation as a main purpose in the life of the students, courses

should be arranged and the instruction given.

If it is enough for the student to know his own purpose the teacher can proceed to instruct his class and depend on the pupils purpose to select just the values that would function in his career. On the other hand if it takes conscious direction on the part of the teacher to secure the best values to the pupils then the teacher with a large class in which there are a multiplicity of aims must differentiate his work. Otherwise injustice will be done to the pupils because wrong emphasis will be given in the selection of values.

The rational basis for the next step forward in education is an answer to these questions. While a life career motive in the pupil seems to be highly desirable yet we do not know whether this motive is simply an incentive to effort or whether the selection and emphasis of value are profoundly influenced by such a motive, if this motive does not influence the selection and emphasis of values, the influence of the teacher's requirements should be tested.

It is the purpose of the following experiments to determine the influence of a life career motive upon the selection and emphasis of values and the

effects of the teacher's requirements upon the same in a given course of study.

This will evidently take two experiments. The first will have to be made with a class pursuing a vocational course.

The class should have in it students who are preparing for different vocations or distinct phases of the same vocation.

The teacher of the class should not know in advance that the class is to be tested and the teaching should have been of such a nature that no conscious efforts were made to differentiate for the pupils different phases of the subject but rather that all phases had been taught with equal emphasis.

If under these conditions very different values are gotten by the different group then it is due to a difference in vocational purpose but if no differences or only slight differences are shown then we may conclude that simply a vocational purpose is not enough to affect the selection and emphasis of values.

If this experiment was followed by the second in which a lesson is prepared with distinctly different purposes for different groups and these purposes are explicit what ever differences there are would be due to differences in purposes in preparation.

It is very common in schools of all grades for teachers to teach their subject with little thought of the particular values which students should get. For example few would deny that history puts the child in possession of his environment and helps him to orient himself with reference to time and progress. That it helps him to realize his place in the trend of the world.

But suppose there were in a particular course of European History some students who had chosen to become lawyers while others had chosen to become doctors of medicine, would their choice of these different professions offer different cores around which the students would organize the material of the course? Or suppose there were in a course in the History of Education those who were to become educators and others who were to become doctors would the values selected and emphasized be far different in the different groups?

If it should be found that a vocational purpose is all that is necessary to secure different selection and emphasis of values the student should be caused as early as possible to select his vocation but if it is

found that a choice of a vocation has little or no effect then the effects of the requirements of the teacher should be tested.

The present investigations were begun with the following hypotheses on the part of the author:

1. A vocational motive is the only rational motive of study because it offers a purpose and incentive to effort and a core around which to organize the material.

2. Material organized around a vocational core functions better in any situation of life than the habits and knowledge gained from a general, formal course.

3. Pupils can be analyzed and intelligently guided to vocations which will give them the maximum of efficiency and enjoyment.

4. The school system must offer to every boy and girl the basic vocational training for the vocation to which they are by natural capacity and bent best suited.

5. Industrial surveys are necessary in every community in order to determine the lines of preparation necessary to meet the requirements of the community.

The first and second hypotheses are basic to the others and upon their truth or falsity stand or fall those that follow. Waiving aside the hypotheses the problem for investigation is two fold:

(1). Does a vocational motive have an effect on the selection and emphases of values which a student gets from a given course when the teacher does not make the pupil definitely conscious of the end?

(2). What effects do different purposes have on the selection and emphasis of values in the preparation of a given lesson when the pupil is made conscious of those definite ends?

Two experiments were conducted to investigate these effects on the study process.

Part 1.

The First Experiment

Section II.

The Method of the First Experiment.

It is one thing to set up hypotheses and another to verify them by inductive investigation.

In part 1. there is given an account of an experiment to show the effect of a vocational motive on the selection and emphasis of values by the students in a vocational course.

The class selected was one situated so that the data could be easily gathered. Within the class were students preparing for different vocations and the students were definitely conscious of the fact that a decision had been made as to their vocations. The class consisted of thirty-six junior and senior students in the History of Education Course. They were enrolled in the School of Education at the University of Kansas. The class was in two sections about evenly divided, one meeting in the morning, the other in the afternoon but both sections were doing the same work.

The author was instructing the class and was conscious of the different phases of the educational field. He had endeavored to emphasize all phases

equally but he had made no attempt to differentiate the students in-to groups nor to make the different students conscious of the fact that they had chosen different fields. He endeavored to lay stress upon organization, administration, supervision, instruction and such other usages as experience had taught him would give the students the best insight into present day problems and furnish a basis for their solution.

The problem of the effects of a vocational purpose upon the selection and emphasis of values was presented to the author during the Christmas holidays, after the class had finished the study of Roman and Early Christian Education, and an examination over the field had been announced when the classes should reassemble. From this it will be seen that the circumstances for using this particular class were most auspicious.

Of course some other class might have been selected. A class in the grades or High School might have been selected but it was thought that the vocational issue might be more clearly drawn in a class where the vocational purpose is well defined.

A mathematics class might offer an opportunity for just such an investigation. If within a single mathematics class there were some students whose purpose was to enter engineering, others whose purpose was to teach mathematics while still others were simply taking the course to fulfill a requirement in mathematics in the University there would be a situation where the effects of a purpose could be tested.

The author's class, however, offered the least difficulty in the administration of the experiment and was consequently selected.

Within this class of thirty-six there were six preparing for administrative positions, twenty-four preparing for teaching and six were taking the course not because they had decided to teach but because they wanted to be able to do so if circumstances made it necessary.

These different phases of education were emphasized to the students by the fact that the courses are classified as History, Administration and Theory and moreover each student is required to make certain selections from each group to fulfill conditions for graduation. Thus the student is required at least to recognize that there are rather well defined groups of subjects.

The same recitations, and examinations had been required of all the students and constituted a purpose for the students in the preparation of their lesson. Such a purpose always enters into the work of a course and students are apt at interpreting the requirements of the instructor but such a purpose is undifferentiated and consequently will lay equal stress on all phases which the instructor emphasizes. Still outside of this purpose there is the vocational aim which we might suppose would work behind the purpose to please the instructor and thus give a different selection and emphasis of values to the student.

The instructor had emphasized to the class the fact that the History of Education is offered to students of education that they may become better educators because it will give them an insight into educational development.. If History of Education does not assist the teacher in interpreting the needs of society and applying such means as will meet these needs, it fails of its purpose. History of Education assists the administrator in the organization of his system, in the development of his curricula and in the selection and application of methods. The teacher should learn the meaning of his work in the development.

of a desirable citizenship and a well rounded individual. It should make the teacher realize more keenly his influence in shaping the nation and his responsibility for a conscious direction of society in its development.

From a cultural point of view whether an educator, legislator or private citizen it is desirable that every citizen be in possession of facts and information which shall be a satisfaction to him and give him a better understanding of the origin and a better appreciation of the present development of educational institutions.

It is readily seen that with-in a class studying History of Education there may be groups with very different purposes. If a vocational purpose has an influence in determining the selection and emphasis of values there would certainly be different values gotten by those preparing for different activities such as administration, instruction and those taking the work for its cultural values.

In testing for the values received by the different groups it seemed to be necessary to rely upon answers to questions and reactions to situations proposed. Such a test can not of course test the remote values which the pupils received but it does give rather accurately an index to the students'

reaction in a real situation.

The questions used in the test had to be so formulated that the answers could be compared and the results evaluated. They had to bear directly and independently on the different phases of education so that when the results were tabulated differences in values received by the different groups would be clearly in evidence.

The phases of education to be emphasized in the test are administration, instruction and cultural.

The topics that would come most directly under the head of administration are school organization and support, the legal status of the schools, curricula, preparation and employment of teachers, school buildings and equipment and school officials. Those that would come most directly under the head of instruction are methods of instruction, textbooks, class room usages, and the results of various methods. Those under the head of cultural are general educational policies and ideals, the basis of morality, the purpose of the school and school support.

Since History of Education is history it should be approached with a historical attitude of mind.

The subject should be studied for the insight it will give into present educational developments and the way the lessons of the past successes and mistakes may be adapted and applied to modern situations. This attitude of mind may be compared with the attitude taken by each of the groups and thus some conclusions drawn as to the influence of a vocational motive on the attitude of mind.

With all these considerations in mind the following test was prepared and given to the class after which the papers were carefully graded and the results analyzed and compared.

The Quiz.

1. Outline the curricula of the Roman elementary, secondary and higher schools in the first century of the present era.

2. Discuss the methods of instruction in each of the above schools.

3. State as accurately as you can:

(a) The ideals of Roman society.

(b) The basis of morality.

(c) Purpose or aim of the Roman schools.

4. Which one of the factors enumerated in (3)

had a marked effect on each of the following and in what respect?

(a) School organization.

(b) The school curriculum.

(c) Methods of instruction.

5. Given to the morning classes.

What suggestions do you get from the history of Roman Education for the readjustment of American schools to meet the needs of American life?

5. Given in the afternoon class.

By what process of reasoning would you judge whether or not a given phase of organization, scope of curriculum or given method of instruction should be incorporated into our school system? Illustrate.

6. Were the early Christian schools wise or unwise in rejecting the Hellenic-Roman literature and philosophy from their curriculum? Give reasons for your answer.

Section. III.

Grading, analysis and Comparison of Results.

To say that the papers were carefully graded means nothing unless the standards used in the grading are known. It is a common practice for instructors to read a paper and assign it a rank from a mere impression. Such a method leaves room for large variations in estimates, depending upon the mood, fatigue and other contingencies. With such standards of grading the ranking of the same paper by the same instructor at different times may vary greatly.

If, however the questions are carefully analyzed and certain standards of attainment set up the grading will be far more uniform. Such a method eliminates to a large degree the subjective factor and introduces a constant criteria of excellence as a standard of measurement.

In grading the papers of this quiz the author pursued the latter plan and broke up the questions into their constituent elements.

He then set up standards of excellence. These standards were the answers that the students would have given had they access during the quiz to the books used in preparing the course.

The author graded each question on the papers of all the students before grading the next to prevent the variation that might come from allowing other questions and answers to be injected and so that the grader would not be influenced by generally lower or higher grades preceding the question being graded.

The questions were all analyzed from two standpoints:

1. The number of parts to each question.
2. The group to whom each question might be most significant.

The analysis is as follows:

1. The first question consisted of three parts all dealing specifically with problems of administration.
2. The second question consists of three parts all dealing with methods of instruction.
3. The third question consists of three parts, the first two belonging to the class of general questions while the third part deals with historical method and interpretation.
4. The fourth question consists of three parts, the first two of which deal with the administrative phase and the last with method of instruction.

5. The fifth question has two phases both of which are general in their character and deal with the historical method of approach.

6. The sixth question has three parts all dealing with general topics.

To summarize:

The questions dealing specifically with administrative phases are, all of 1 and the first two parts of 4.

Those dealing with instruction are all of 2 and the third part of 4.

Those dealing with questions which are general in their nature and consequently those with which the cultural group might do the best are the first two parts of 3 and all of 6.

The questions which tested the historical attitude are the third part of 3, in connection with all of 5.

The problem of scoring arose as soon as the papers were in. Should each of the six questions be counted as of equal value or should an attempt be made to evaluate the different questions and assign larger values to one question than to another? If different values had been assigned to different questions the assignment would have been largely arbitrary.

If it were necessary to compare total scores the scoring of individual questions would be more vital but since the purpose is a comparison of performances in each question and part of question it is not essential what score is assigned to any question or part. The same basis however must be maintained throughout the grading of the particular question. In evaluating results it is a comparison of the performance of the different groups in each part of a question that will reveal the different values received and thus throw light on the problem.

If then all the questions are assigned equal value shall that value be one sixth of 100% or $16\frac{2}{3}\%$? The use of 100% as a basis throws the results into fractions and makes more difficult the grading but since 100% is often used as the basis of grading and will be more readily understood 100% will be used as the basis.

The students had used Laurie, Prechristian Education; Graves, History of Education as well as other standard History of Education to supplement the class lecture and the syllabus.

The following are some answers taken from different

papers and assigned a perfect score because they were judged to be satisfactory.

I. a. "The curriculum of the Roman Elementary Schools was: reading, writing, arithmetic, Latinized version of the Odyssey by Adrionicus and the twelve tablets."

b. "The curriculum of the Grammar School was: Greek and Latin languages, literature including Homer, Vergil, Horace, and other Greek poetry: grammar, geography, geometry, astronomy and music for the purpose of

c. "The curriculum of the Rhetorical Schools was: The seven liberal arts, namely: grammar, rhetoric, dialectics, astronomy, arithmetic, geometry, and music; study of literature was continued; a study of what would now be called civics to interest students in activities of government."

2. a. "The methods of instruction in the elementary schools was in general imitative and memory work. In reading the pupil first learned the letters in alphabetic order, then syllables were learned, then words and finally sentences, Quintilian protested against this method."

b. In the grammar school the methods were more advanced. The other subjects were learned through the study of literature. There was still much memorizing of literature. The teacher gave his explanations of the text and the pupils wrote it down word for word and learned it verbatim.

c. In the Rhetorical Schools it seems that the methods were most effective. The students had exercises to write and to give orally. There were mock trials and an endeavor to use the laboratory method."

3. a. "The ideals of Roman society were:

1. Practical and utilitarian.

2. These latin words express their ideals very clearly: fortitude, pietas, gravitas, constantia and prudentia.

b. Their basis of morality was practical. They thought it to their advantage to do homage to the gods. They were very patriotic.

c. The purpose or aim of the school was at first chiefly practical. They had little training except what was necessary for them to carry out their ideals. Later when their ideals were extended by the absorption of Greek culture this same aim was still carried out to some degree. They wanted to become

great orators and every thing was for show. The chief thing which the Roman father desired of his sons was to be patriotic and get rich."

4. "The aim of the school had a marked effect on the following : The schools were organized so that the content of the curriculum was such and methods of instruction were such that the product of all these would be able to know just how to start in and become rich as soon as possible. Thus every study had a practical bearing and could be applied immediately. The cultural was alright just in so far as it served the practical purpose, but nothing purely for culture would be endured. Thus they did not follow a psychological method of instruction but rather practical methods. Finally the whole organization was for the practical view."

5. Morning Class.

1. To have an effective education we must have an all round development of the youth and found the school system and educational ideals upon a broad sound basis rather than on a narrow utilitarian basis.

2. As society changes new demands are made upon citizens and new ideals introduced and the school system should be changed to meet these demands. i.e. The Romans had three distinct national periods of

education representing the ideals of that period.

3. If we find some other nation which has a better system of education and a better method of instruction we should make use of it for our own advantage. Rome was a borrowing race, getting many institutions from Greece and worked them over to suit her own needs."

5. After noon Class.

"We can judge whether some phase of Roman education should be incorporated into our system by how it worked in their system, whether it improved the course, how it fitted people to take their place in the world better than they could have with out it. But of course difference in social conditions between their time and ours have to be considered also, while one thing might have worked in their schools it possibly would not in ours.

The method of imitation would not work well in our schools. The difference in people may have something to do with it but our students prefer to find out things for themselves. Where we have laboratory courses it would be foolish to have the teacher merely tell how to do things and what happened."

6.. "Probably at the time that the Christian schools rejected the Hellenic Roman Literature and philosophy from their curriculum they were almost forced to do so and were in a measure wise. Rome had so fallen in vice and corruption that any connection of christian education with pagan education was received with disfavor. It was only natural that when pagan minds were attracted by worldly things the christians would go to the very opposite extreme., At that time it would have been difficult for them to present their new teachings and at the same time use pagan literature. At present we see many good things contained in the old pagan literature and it is hard to see why it was not accepted at first."

6. "I do not think the Christians were wise in rejecting the Hellenic-Roman literature. They were prejudiced and did not take into consideration the real worth of this literature. They hated the Romans and on account of their vice and the persecutions inflicted by the Romans the Christians thought their literature was but an embodiment of their vice and immorality, however some of the Christians fathers were not so narrow as the majority of the early Christians and encouraged the copying of this liter-

ature. There was much that was good in the literature and later came to be read and studied a great deal. The early Christians were very ignorant and were not capable of judging this literature."

In this investigation the standard of excellence was the best that any student could have done if he had had the text books at hand during the quiz. This standard eliminates to the utmost the subjective standard after the answers have once been agreed upon.

Other standards might have been used, namely;

(1) What might reasonably have been expected of the student.

(2) The performance of the best student in the class.

(3) The performance of the average student.

The following gives the standard by which all the papers were graded:

Question 1. Outline the curricula of the Roman elementary, secondary and higher schools in the first century of the present era.

Answer

1. Elementary: reading, writing, calculation and literature.

2. Grammar School: grammar, literature, geometry, astronomy, geography, music all purely practical except literature.

3. Rhetorical School: grammar, rhetoric, dialectics music, arithmetic, geometry, astronomy.

A brief indication of the content and nature of each subject in addition to the mere enumeration of subjects was required.

Question 2.

Discuss the methods of instruction in each of the above schools.

Answer;

Elementary: The methods were memoriter, and imitative. Reading: name and order of letters, letters themselves, all possible combinations of syllables memorized, reading and writing from dictation by the teacher, much attention to clear and correct pronunciation and intelligent expression.

Grammar School: purely instructional, teachers read and then dictated explanations which pupils copied verbatim, much literature read and copied.

Rhetorical Schools: practice in declamation on legal and ethical subjects with lectures,

Question. 111.

State as accurately as you can:

- (a) The ideals of Roman Society.
- (b) The basis of morality.
- (c) Purpose or aim of the Roman Schools.

Answer..

- (a) The ideal of Roman Society was the practical.
- (b) Ancestral worship and an organized animism, justice.

Worship was to secure the good will of the gods in order that material prosperity might attend the efforts of the individual and the nation.

(c) The purpose of the school was to teach the utilitarian.

Question.

4. Which one of the factors enumerated in (3) had a marked effect on each of the following and in what respect?

- (a) School organization.
- (b) The school curriculum.
- (c) Methods of instruction.

Answer.

(a) Since the ideals were practical and did not contemplate an abstraction of state building the school organization was not interfered with by

the state hence the ideals of Roman society had a marked effect on the school organization.

(b) Since the aim was utilitarian the curriculum would be made up of such subjects as would contribute to material welfare hence the aim of the school fixed the curriculum.

(c) The methods of instruction were influenced by the aim of the schools and the ideals of society since the object was use, so the method was to learn how, not to develop the individual. The methods were mechanical, memoritor, lifeless.

In this question there are given three factors that might influence three lines of action:

- | | | |
|-----------------------|-----------|---------------------------|
| 1. Ideals of Society | influence | the school |
| 2. Basis of morality | | 1. organization of |
| 3. Aim of the schools | | 2. The curriculum |
| | | 3. Methods of instruction |

What ever the answer there must be given the reason for the answer.

Question 5.

Morning Class;

What suggestion do you get from the History of Roman Education for the readjustment of American schools to meet the needs of American life?

Answer.

There should be at least two suggestions and with each suggestion there should be an explanation as to why the suggestion is offered. If there are more than two, grades on the basis of the number given.

Question .. V.

Afternoon Class:

By what process of reasoning would you judge whether or not a given phase of organization, of curriculum, or given method of instruction should be incorporated into our school system?

Illustrate.

Answer.

The process by which we may judge of whether or not any phase of activity in any nation may be adopted is by comparing the two periods of civilization, judging the requirement of the two periods and adapting the phase of the Roman School or rejecting it as conditions might necessitate.

Question 6.

Were the early Christian schools wise or unwise in rejecting the Hellenic Roman literature and philosophy from their curriculum? Give reasons for

your answer.

Answer.

They were wise in that Christianity was allowed to develop its own literature and traditions.

Unwise in that 800 years had to be denied the culture and civilization of Hellenic Roman civilization. Both sides of the question should be stated and conclusions drawn.

Thus has been given the standard by which the different questions were graded and answers from the papers of students which were given a perfect score, are offered so that an adequate judgment may be made as to the reliability of the results.

In preparation for the quiz the following questions had been mimeographed and passed out to each member of the class. The questions were intended to direct the attention of the student to the fundamentals of the subject and to secure a review of what had been developed in the class and in the readings. The questions were prepared and passed out before it was decided to make a test for the effect of a vocational purpose. The questions were intended to lay equal stress on all phases of the subject and stimulate a thorough review.

The questions are as follows:

Review of Roman and Early Christian Education.

1. Show how the school system of Rome at different times embodied the ideals of the nation at that period.
2. Outline the curricula of the elementary, secondary and higher schools of Rome in the first century of the present era. Outline the method of instruction in each system.
3. Discuss the influences that caused Rome to become a world power. That caused her decay.
4. Compare the Roman system of education with some of the other systems you have studied. How does it rank among them?
5. In what respects were the Roman schools good? In what respects weak?
6. How do you judge the efficiency of a school system?
7. Were the Roman schools broadly civilizing or narrowly institutional?
8. Were the schools developed under conscious, rational guidance?
9. In what interest was the Roman system organized: industrial, citizenship, highest ideal of civilization or other?

10. What ideal of life was fostered? What was the basis of the moral code?
11. To what degree was the system of education rationally adapted to a purpose and in how far did the system follow tradition?
12. Differentiate between a teacher and an educator. Can a person be one without being the other?
13. What did Rome contribute to the experience of the race?
14. Trace the rise in public esteem of the Roman school master.
15. To what extent did education in Rome reach all the people? What influence did this have on the state?
16. What may we learn from the Romans about: the use of literature, value of grammar, the use of foreign language, civics, the influence of the character of the teacher?
17. Would the history of Rome probably have been different if she had had a state system of schools with prescribed curriculum and compulsory education.
18. What was Plato's position in the "Republic" on

prescribed curricula and compulsory education?

19. What did Aristotle contribute to the world?
20. What element of strength did Christianity possess that it became the state religion in less than 300 years?
21. What new ideals of life were embodied in the early Christian schools?
22. Trace the hostility of the early church to the classics.
23. Outline the curricula of the catechumenal, catechetical and episcopal schools.
24. Trace the rise of monasticism in the early church.
25. What relations existed between the monastery and the church?
26. How were the classics preserved in the face of the hostility of the church?
27. Contrast the methods of instruction in the Hellenic-Roman schools and the early Christian schools.

Classification of Students.

After the quiz was completed it was necessary for the experimenter to know in how far the students had made a vocational decision. This information could not be gotten before the quiz because the request for the information might have had an influence in making the students conscious of vocational differences and thus have influenced their work in the quiz. The next day after the quiz a questionnaire was given to each student with the request that it be filled out as carefully as possible and they were assured that their answers would in no way affect their relation with the school or class.

The following is the questionnaire for students in History of Education.

The answers to the following questions are for statistical compilation. They will be confidential and will in no way affect your class or University standing, therefore please be perfectly frank in your answers.

1. Name.....Age.....

2. What is your purpose in entering the History of Education course, cultural or professional?

.....

3. In case you answer professional have you fully decided the question or are you taking the course so that in case you want to enter the field later on you will be prepared to do so?
4.
Have you decided what you will prepare for, superintendency, high school principalship, supervisory work or teacher?If so which.....
5. If you have decided to teach what subject or subjects are you preparing for?.....
6. In what grade of school do you expect to teach, elementary, secondary, or higher?.....
7. How much education do you expect to get before you begin to teach?.....
8. Has your choice of field or subject of instruction caused you to lay particular emphasis on any phase of the History of Education?.....
.If so what phase?.....
9. Number the following subjects, first ten choices only, in the order of your choice if you were choosing for special study, research and theme work:

History of Methods.....History of the course of
 study.....History of School Organization.....
 History of School Discipline.....History of Arith-
 metic.....History of Geometry.....The Evolution
 of the School Master.....History of the Education
 of Women.....Influence of Religion on Education
 Influence of Environment on Education
Influence of the Family on Education
Evolution of School Equipment.....
 History of Reading.....Development of Higher Education.
Development of Secondary Education.....
 History of Myths and Folklore in Education.....
 History of Music.....Influence of Class in History
 of Education.....Contributions of the Semetic
 Race to History of Education.....Contribution
 of the Ayran Race to The History of Education.....
 History of Monasticism,.....History of the
 Alphabet and its Influence on Education.
 10. What governed you in the choice of your
 subjects?.....

Results from the questionnaire.

Of the thirty-six filling out the questionnaire, five said they were taking the subject for both professional and cultural purposes, one said that he was taking the subject for cultural values only, while the other thirty answered that their purpose was purely professional.

There were six that said they had not yet fully decided to teach and were therefore taking the subject simply to be prepared in case they later decided to do so. These six constituted the cultural group.

Six others said definitely that they were preparing for administrative positions. These constituted group two or the administrative group.

The other twenty-four said definitely that they were preparing to teach and had selected their majors and minors.

To question eight, with respect to the influence that their decision had made on the organization of material and the emphasis on different phases, ten answered that they had been definitely influenced in the stress they had placed on various phases of the subject while twenty-two answered that it had had no effect

on them. The other four failed to make answer to the question.

Of the ten who said they had been influenced, five said they had laid most stress on methods and three said they had laid most on administration.

The five who said they had been influenced to study methods more particularly averaged 16.8%, which is a perfect score. The general average on the second question was 15.3%. The five averaged almost 10% higher than the average of the whole group. However this particular group of five averaged on the whole quiz 89.3% while the general average was 86.7%. This group of five was evidently better than the average and their superior work was not due to special emphasis on methods.

Three of the above who said they had laid emphasis on the administrative phase of the subject received 13.3% on the first question while the general average was 12.3%. These three averaged 83.5% on the whole quiz while the general average was 86.7%. The results here show that the three did better on the particular part where they said they had laid emphasis but the numbers are too small to make a generalization safe.

Question number nine was put into the questionnaire to determine whether a vocational purpose would influence the students in a choice of subjects.

The subjects were divided as follows:

Those dealing with administration: History of School organization, The Evolution of the School Master, Evolution of School Equipment, Development of Higher Education, Development of Secondary Education

Those dealing with Instruction: History of Methods, History of School Discipline, History of Mathematics, History of Geometry, History of Reading History of Music, History of the Alphabet and its Influence on Education. Those dealing with the cultural phases: History of the Education of Women Influence of Religion on Education, Influence of Environment on Education, Influence of the family on Education, Influence of Class in the History of Education, Contribution of the Semetic Race to History of Education, Contribution of the Ayran Race to the History of Education, History of Monastician.

The ten choices of each student were tabulated so as to show the number of each class of subjects selected by each group. The results were as follows:

	Administrative,	Teachers'	Cu.Sub.
Cultural Group Chose	12	13	19
Administrative group chose	19	3	19
Teacher group chose	60	63	103

Since there were only five questions in the administrative group each number in the first column should be multiplied by $\frac{8}{5}$ to reduce all to the basis of eight subjects, then the first column would read 19, 30 and 96 instead of 12, 19 and 60.

It would seem that the administrative group were influence slightly in their choice by their motive but the other groups do not seem to have been.

A Summary of the grades.

Chart 1 shows a summary of all the grades by groups and questions. "G" stands for grade and is the grade on the part of a question on the basis of 100%, "A.D." stands for the average deviation and shows the regularity of the performance of each group. "C.V." stands for coefficient of variability and gives in a single expression the regularity of the performance of the group.

The first section of the chart shows the performance of the various groups on the administrative questions.

The second section shows the same for the teachers' questions, .

The third section shows the same for the cultural questions.

The fourth section shows the same for the questions involving the historical method of approach by the students.

Graph I page 48 shows in a graphical form the material in chart I, page 47.

Administration Questions.

Questions	I-a			I-B			I-c			IV-1-a			IV-1-b			IV-2-a			IV-2-b			Total
	G	A.D.	C.V	G	A.D.	C.V	G	A.D.	C.V	G	A.D.	C.V	G	A.D.	C.V	G	A.D.	C.V	G	A.D.	C.V	
Culture	5.6	0	0	4.5	.67	.19	3.8	1.0	.33	2.8	0	0	1.9	1.2	.81	2.8	0	0	2.3	.80	.44	23.7
Admin.	5.6	0	0	3.2	1.2	.48	3.4	1.3	.49	2.8	0	0	1.9	1.2	.81	2.8	0	0	2.8	0	0	22.5
Teachers	5.6	0	0	3.2	1.3	.51	3.4	1.5	.57	2.7	.21	.10	2.1	1.1	.63	2.8	0	0	2.3	.88	.48	22.1
Average	5.6	0	0	3.4			3.5			2.7			2.0			2.8			2.4			22.4

Teachers Questions.

Questions	II-a			II-b			II-c			IV-3-a			IV-3-b									Total
	G	A.D.	C.V	G	A.D.	C.V	G	A.D.	C.V	G	A.D.	C.V	G	A.D.	C.V	G	A.D.	C.V	G	A.D.	C.V	
Culture	5.6	0	0	4.9	.93	.24	4.6	1.4	.38	2.8	0	0	1.4	1.4	1.2							19.3
Admin.	5.3	.47	.11	4.7	.88	.23	5.2	.70	.17	2.3	.80	.43	1.4	1.4	1.2							18.9
Teachers	5.6	0	0	4.6	1.3	.35	5.0	.93	.23	2.3	.80	.43	1.9	1.2	.91							19.4
Average	5.4			4.8			5.0			2.4			1.7									19.3

Cultural Questions.

Questions	III-a			III-b			VI-a			VI-b			VI-c									Total
	G	A.D.	C.V	G	A.D.	C.V	G	A.D.	C.V	G	A.D.	C.V	G	A.D.	C.V	G	A.D.	C.V	G	A.D.	C.V	
Culture	5.6	0	0	5.6	0	0	5.6	0	0	5.6	0	0	3.7	2.5	.85							26.1
Admin.	5.2	.70	.17	5.2	.70	.17	5.6	0	0	5.6	0	0	3.7	2.5	.85							25.3
Teachers	5.2	.68	.16	5.2	.75	.18	5.6	0	0	5.6	0	0	4.2	2.1	.63							25.8
Average	5.3			5.3			5.6			5.6			4.0									25.8

Historical Method Questions.

Questions	III-c			V-a			V-b															Total
	G	A.D.	C.V	G	A.D.	C.V	G	A.D.	C.V	G	A.D.	C.V	G	A.D.	C.V	G	A.D.	C.V	G	A.D.	C.V	
Culture	5.3	.70	.16	2.8	.37	.13	6.9	2.3	.43													14.9
Admin.	5.6	0	0	5.8	2.5	.54	8.3	0	0													19.7
Teachers	5.2	.68	.16	7.1	1.8	.36	7.6	1.2	.21													19.9
Average	5.3			6.2			7.6															19.1

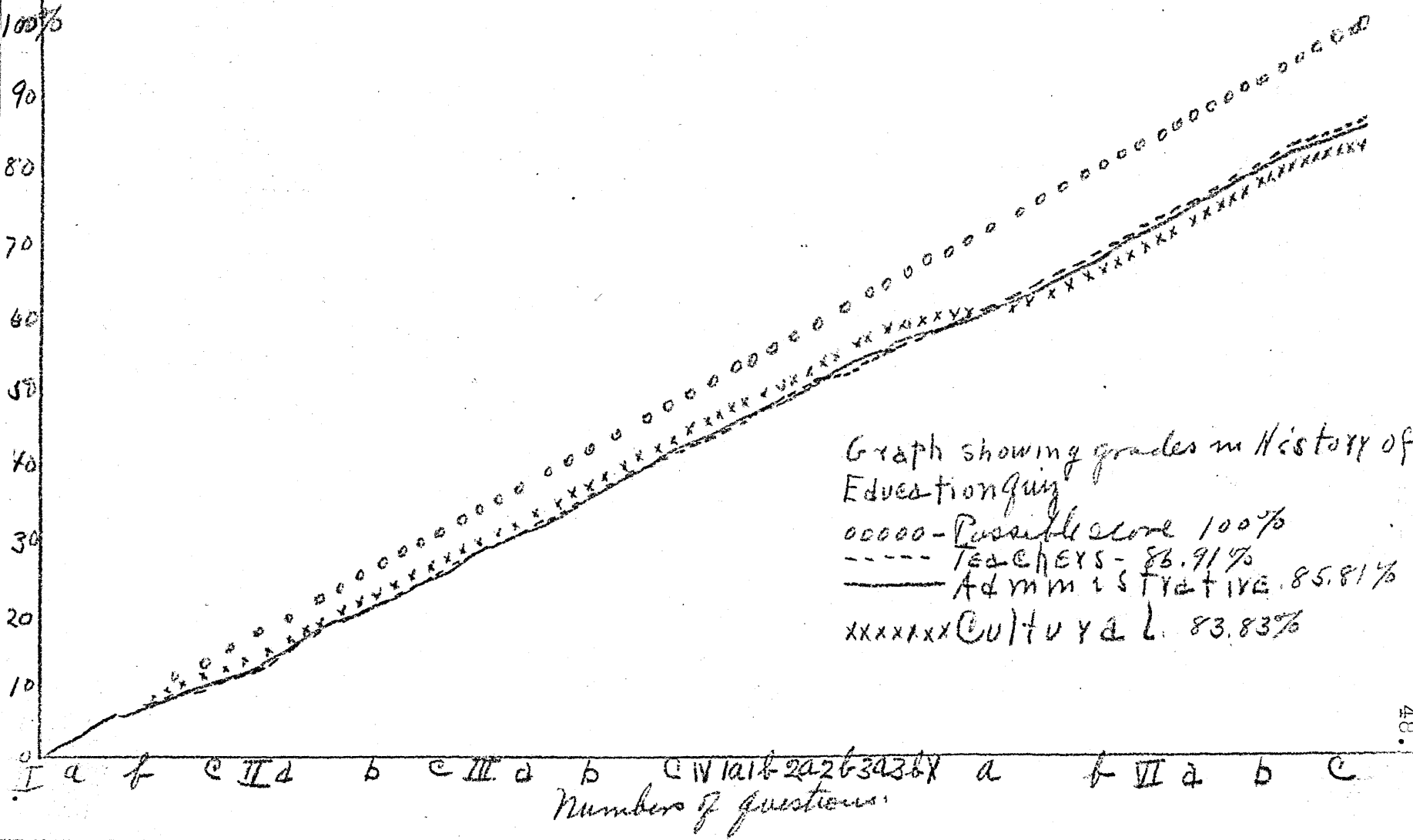
Chart I.

This chart shows a summary of the grades of each group of students under the questions grouped into the classes Administrative, Teachers, Cultural and Historical Methods.

G= grade; A.D= Average Deviation; C.V= Coefficient of Variability.

Total is the total points made on the group of questions by the student group.

Graph I



Analysis of Results of the Quiz.

We shall analyze the results by groups taking in order the Administrative, Teachers, Cultural, and Historical Method groups:

According to the classification of the questions and answers^{those} belonging to the administrative group were II, a, b, c, 4, 1a, 1b, 2a, 2b.

I (a) deals with the curriculum of the Roman Elementary School. It seemed to be easy since every Students in the class answered it correctly and their average was a perfect score, 5.6%

I (b) deals with the curriculum of the Secondary Schools. On this answer the results were as follows:

	Grade	Average Dev.*	Index of Var.*
Culture group.....	4.5%	.67	.19
Administration. , ,	3.2	1.23	.48
Teachers.....	3.2	1.32	.51

* The average deviation is the sum of the deviations from the average of the grades divided by the number of pupils. It gives a better idea of the regularity and uniformity of the work than a mere average.

The Index of Variability is a number which shows at a glance the regularity of the work done by the

pupils in a class. It is found by dividing the standard deviation by the average of the grades. The standard deviation is the average deviation multiplied by 1.2533-

In this particular case the grades of the cultural group are 41% higher than of the administrative group while the average deviation is higher in the administrative group by .56 or the coefficient of variability is .48 as against .19 for the cultural group. Thus the cultural group outdistanced the administrative by large odds. The grade of the teachers was about the same as for the administrative group.

I.c requires a discussion of the curriculum of the Roman Higher Schools. The cultural group averaged 10% higher than the administrative group while the teachers averaged just the same as the administrative group.

The average deviation of the culture group was 1. Of the administrative 1.32 and of the teachers was 1.55 The coefficients of variability were .33, .49 and .57 respectively. In this question the administrative group was much below the cultural and just equal to the teaching group. Here the result is rather negative in bearing out the original hypothesis.

4. 1. a, asks for a judgment and the reasons for the judgment. The question deals with school organization, a purely administrative feature of school work. In this question the administrative group equaled the cultural group and slightly excelled the teachers.

4. 1, b, is the explanation of the judgment in

4. 1 a, The administrative group this time equaled the cultural group but the teachers excelled both of the other groups.

4. 2a. had a perfect score for all the groups. The question was so easy that no pupil in the whole class missed it.

4. 2b. deals with the reason for the judgment in 4, 2a. In this case only did the administrative group exceed both the others. In this case the average of the administrative group was 22% higher than either of the other groups.

Out of seven grades the administrative group was highest once, the teachers once and the cultural group twice. The administrative group was as high as either of the other groups three times and as low as the lowest three times.

When all the points made by the various groups were added the cultural group had 23.7 the administrative group 22.5 and the teachers group 22.1 or the cultural group was 5% higher than the administrative group while the teachers averaged 2% lower than the administrative group.

Graph 2, shows the performance of the various groups. It was possible to make a score of 27.73% on the administrative questions. The cultural group made 24.33%, the administrative 22.26%,

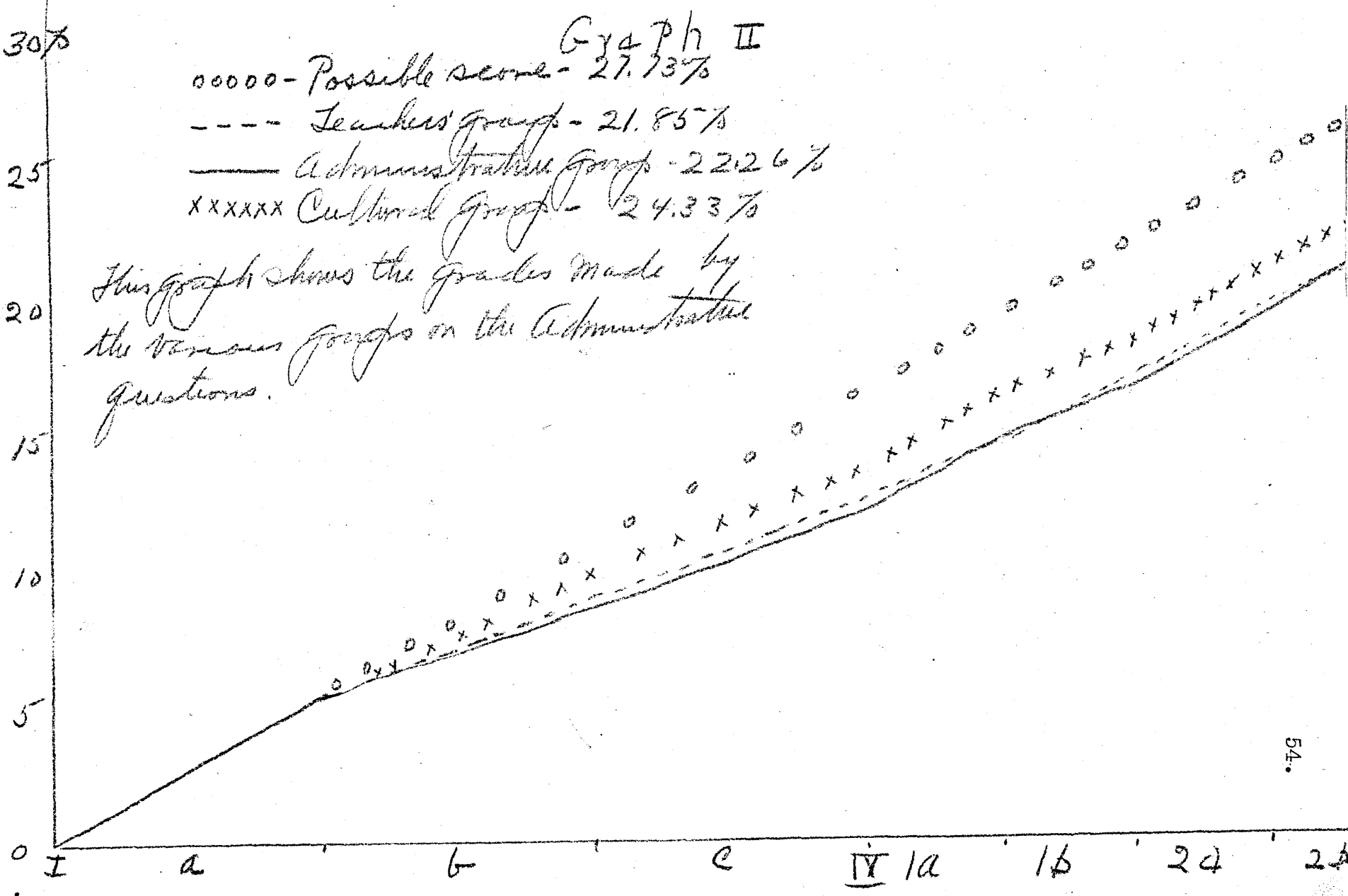
the teachers group 21.85%. On the administrative questions the administrative group fell 9% below the performance of the cultural group.

It is therefore evident that the vocational purpose of the administrative group did not result in their being able to surpass a group whose purpose was to say the least doubtful.

The next group of questions considered is that of the teachers. The questions which deal specifically with the teachers phase of education are 2 a, b, c; 4, 3a, 3b,; question 3a asks for a discussion of the methods of instruction in the elementary schools.

The results were as follows: cultural group 5.6, administrative group 5.3 and the teachers group 5.6. That is the teachers and the cultural group made perfect scores while the administrative group fell below them 6%.

2 (b) asks for a discussion of methods in the secondary schools and the results were as follows; cultured 4.9; administrative 4.7; teachers 4.6. The average deviation was .93; .87 and 1.34 respectively and the coefficients of variability were .24 ; .23 and .35 respectively.



2. (c) Called for a discussion of the methods in the Higher Schools. The scores were 4.6, 5.2 and 5. for the cultural., administrative and teachers respectively; that is, the teachers were 4% below the administrative and 9% above the cultural.

The average deviations were 1.4, .7 and .93 respectively for the cultural, administrative and teacher groups while the coefficients of variability were .38, .17 and .23 respectively.

4. 3a calls for a judgment on causes affecting methods. The results were 2.8 points for the cultural, 2.3 for the administrative and 2.3 for the teachers. the teachers fell 22% below the cultural group and just equaled the administrative group.

The average deviation and the coefficient of variability do not show much difference of performance among the groups.

4 -3b calls for reasons for the judgment in 3a. Here the teachers did better than either of the others groups. The scores were 1.4, 1.4 and 1.9 for the cultural, administrative and teachers respectively while the average deviations were 1.4 1.4 and 1.2 respectively. The coefficients of

variability were 1.2, 1.2 and .91 respectively.

Graph number 3 shows the performance of the various groups on the teachers' questions.

The possible total grade on these questions was 22.22%. The teachers made 19.26% the cultural group 19.12 and the administrative 18.82%.

The cultural group is only .7% below the teachers group in average even though the questions be those that belong to the teachers' group.

It is evident here again that a vocational motive is not affecting the group to an appreciable degree. There was no regularity of gain in the different questions and so slight an advantage in the total as not to be mentioned.

Graph III

25%

20

15

10

5

- 00000 - Possible score - 22.22%
- Teacher group - 19.26%
- Administrative group 18.82%
- xxxxxxx Cultural group - 19.12%

This graph shows the grades made by the various groups on the Teacher questions

II a b c IV 3a 3b

Cultural Group.

The next group of questions are so general in their character that any person would be interested in the answers whether he be an educator or an intelligent layman. These questions are III a and b and VI a, b and c.

III a asks for the ideals of Roman society. Any student of history, literature, government or religion should be interested in these facts and should be able to answer the question. The scores showed 5.6, 5.2 and 5.2 respectively for the cultural, administrative and teacher groups. This shows the cultural group to be 8% above the other two groups.

IIIb calls for a discussion of the basis of morality. Here again is a question whose scope is much beyond the interests of the educator only. It is a question of Ethics. The scores were 5.6, 5.2 and 5.2 for the cultural, administrative and teacher groups respectively. Again the cultural group ranks 8% above the other groups.

VI a and VI b are of such a nature that they cannot be answered dogmatically, wise or unwise. The advantages and disadvantages should be stated and the two answers weighed as VI c.

In VIa and VIb it was found that every student of

the 36 had given both sides of the question and hence all the scores were perfect. In VIc many stopped short of a conclusion and consequently the scores ran 3.7, 3.7 and 4.2, for the cultural, administrative and teacher groups respectively. Here the teachers score is 14% above that of either the cultural or the administrative groups.

Taking it on the whole the cultural group shows a marked superiority over either of the other two since the cultural group received four perfect scores out of the five possible. The sum of the scores were 26.1, 25.3 and 25.8 respectively for the cultural, administrative and teacher groups. The cultural group averaged 5% higher than the administrative group and 1% higher than the teachers. The results are shown on graph IV.

30%

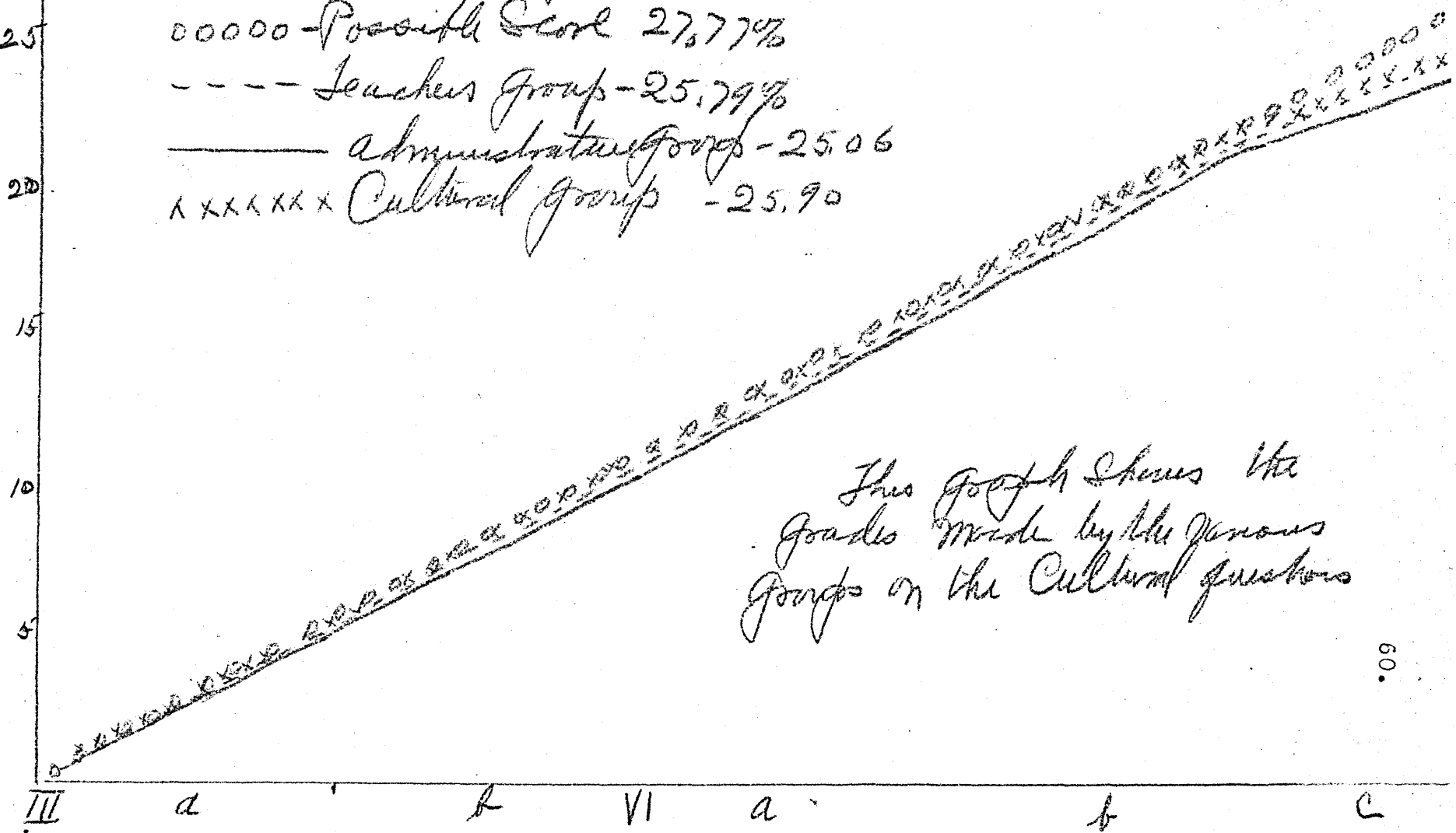
Graph IV

ooooo - Possible Score 27.77%

----- Teachers Group - 25.79%

----- Administrative Group - 25.06

xxxxxxx Cultural Group - 25.90



This Graph Shows the
 Grades Made by the Various
 Groups on the Cultural questions

HISTORICAL ATTITUDE GROUP.

The last group of grades are taken from IIIc, and Va and b. The object of these questions was to test the attitude of mind toward history and its teaching.

IIIc asks the aim or purpose of the Roman Schools. This is the question that naturally arises at every turn in history. What is the aim, the purpose? What is it all about? What does it all mean? The scores were 5.2, 5.6 and 5.2 respectively for the cultural, administrative and teachers.

This showed the administrators 8% above either of the other groups.

V asks a discussion of what a class might expect to get from a course in history. Since the class was in two sections it was thought wise to ask the questions in different ways in the two sections that the results might be compared. In either case it was expected that the answers would be much the same.

The form of the question in the morning section was, "What suggestions do you get from the History of Roman Education for the readjustment of the American

schools to meet the needs of American life?

In the afternoon section the form of the question was: "By what process of reasoning would you judge whether or not a given phase of organization, scope of curriculum or given method of instruction should be incorporated in our school system? Illustrate.

It was expected that Va would call out a discussion to show that nothing can be adopted by one nation from another without first considering the peculiarities of time, race, and conditions, adaptation may often be made with profit.

The scores made were 2.8: 5.8 ; and 7.1 respectively by the cultural, administrative and teacher groups.

Vb. should have secured illustrative material and the scores were 6.9 ; 8.3 and 7.6 respectively for the cultural, administrative and teacher groups.

In the application of the historical method the administrative group stood highest. In the total scores the cultural group received 14.9 points, the administrative group 19.7 and the teachers group 19.1

On this question there was the most marked variation. The results are shown on graph V.

Graph VI

25%

ooooo - Possible score 22.29%

----- Leaders group 20.01%

————— Administrative group 19.67%

xxxxxx Cultural group 15.26

20

15

10

5

III

C

V

a

b

This graph shows the grades of the various groups on the Historical Methods questions.

Summary showing how many times each group stood first in score in each kind of question.

Kind of questions.					Total	Total
Group.	Cult- ural	Admin- istrative	Teac- hers	Hist- orical methods	Total no. of firsts	no. of points in fin. score.
Cultural	4	5	3	0	12	84
Administrative	2	4	1	2	9	86.4
Teachers	3	3	2	1	9	87.2

From the above tabulation it will be seen that the cultural group had the highest number of first in every kind of questions except those dealing with the historical method while the administrative group stood first once and the teachers group not at all. The cultural group stood lowest once, the administrative group twice and the teachers group twice. The cultural group has twelve firsts the administrative and teachers each nine firsts.

In final score however the cultural group with twelve firsts stands lowest while the teachers group with no first stands highest. These results may be accounted for by the fact that while the cultural group received twelve first yet their performance was erratic while the teacher group with no first did regular, consistent work. This fact was well shown

on graph five page 63.

Summary of Part I.

A most careful analysis fails to discover any relation between vocational purpose and the selection and emphasis of values in the study process.

The group tested was certainly fairly representative since the whole group was taken just as they had by chance enrolled in the course. The results might have been more convincing had the group been larger, yet if the group were representative adding numbers would not change the general results. It has been shown that the vocational purpose was well defined in the minds of the students.

History of education may be treated as a cultural course but in the school of education it is approached as a vocational subject in a vocational school and must be recognized as the first and basic course in the preparation of teachers.

With so much in this experiment in favor of the original hypothesis; namely, that a vocational purpose would have a marked influence on the selection and emphasis of values, a failure in the experiment and its results to reveal such influence or tending in that

direction pulls down the hypothesis, evidently an implicit purpose does not form an organizing core for the material which the student studies. The other large and immediate purposes that might have played in on the student are the requirements of the teacher.

It might seem that a vocational purpose would play in behind the purpose to please the teacher, but the fact that it did not, leave the way open for a farther experiment to test whether or not the requirements of the teacher do have a marked effect on the selection and emphasis of values.

Part. II.

The Second Experiment.

Section IV.

The Method of the Second Experiment.

The results of the first experiment show that an implicit purpose had little or no effect on the selection and emphasis of values by the students of the group. An experiment that would be exactly comparable with the first in showing that an explicit purpose has an effect would require a similar class taught so as to make the vocational purpose explicit to the fullest extent. Circumstances were such that no class

was available consequently for the second experiment it was necessary to secure data from a single class preparation. Instead of being able to test the effects of an explicit purpose in a series^{of} preparations such as a semester's work the data was gathered from what would be a cross sectional area of a series; i, e, from a single preparation with the purpose explicit. What happens or is true in a single preparation would be true in the results of a series of preparations, no doubt, for it would seem that the effects would be cumulative.

The data to show the effects of an explicit purpose or to show the effects of different requirements of the teachers on different groups of a class could be gotten from almost any class exercise.

Suppose a teacher were to divide a class of children into two groups and should teach one group a game with the purpose of playing the game. The other group might be taught the game with the purpose of being able to take a written examination on the material studied. The two groups could then be tested together first in taking a written examination and second in playing the game. Would there be a difference in the

performance of the two groups either in the examination or in the playing of the game?

If, however, it were possible to get several groups in the same class with purposes as clearly drawn as above all these groups could be tested with the same test and differences of selection and emphasis of material would stand out clearly, if they existed.

The different purposes would have to be clear cut and definitely drawn, and appeal to as many different phases of vital human interest as possible. The test should give opportunity for different kinds of individual expression as visual, auditory, motor etc. because persons with one power of expression highly developed might be handicapped because they were not given opportunity for that kind of expression.

The material selected for the preparation should be new to the whole class so as to eliminate the advantages of previous preparation. The material should be clearly within the comprehension of the class and the quantity should be such as to require about the time which the class usually has for the

preparation of an assignment.

It should be difficult enough to test the mettle of the class. The test should give free play to memory imagination and judgment. The material should be capable of being approached from several different view points and prepared with several different purposes.

The material finally selected as best suited to the purposes of the experiment was the description of the battle of Waterloo from Victor Hugo's *Les Misérables*.

The selection is as follows;

THE BATTLE OF WATERLOO.

"Let us go back, for such is the story-teller's privilege, and place ourselves in the year 1815, a little before the date of the commencement of the action narrated in the first part of this book.

Had it not rained on the night of the 17th of June, 1815, the future of Europe would have been changed. A few drops of water, more or less, prostrated Napoleon. That Waterloo should be the end of Austerlitz, Providence needed only a little rain, and an unseasonable cloud crossing the sky sufficed for the overthrow of a world.

. The battle of Waterloo--and this gave Blucher time to come up--could not be commenced before 11:30 o'clock. Why? Because the ground was soft. It was necessary to wait for it to acquire some little firmness so that the artillery could maneuver.

Napoleon was an artillery officer and he never forgot it. The foundation of this prodigious captain was the man who, in his report to the directory upon Aboukir, said: "Such of our balls killed six men." All his plans of battle were made for projectiles. To converge the artillery upon a given point was his key to victory. He treated the strategy of the hostile general as a citadel and battered it to a breach. He overwhelmed the weak point with grape; he joined and re-

solved battle with cannon. There was marksmanship in his genius. To destroy squares, to pulverize regiments, to break lines, to crush and disperse masses, all this was for him, to strike, strike, strike incessantly and he intrusted this duty to the cannon ball. A formidable method, which joined to genius made this somber athlete of the pugilism of war invincible for fifteen years.

On the 18th of June, 1815, he counted on his artillery the more because he had the advantage in numbers. Wellington had only 159 guns; Napoleon had 240.

Had the ground been dry and the artillery able to move, the action would have been commenced at 6 O'clock in the morning. The battle would have been won and finished at 2 o'clock, three hours before the Prussians turned the scale of fortune.

How much fault is there on the part of Napoleon in the loss of this battle? Is the shipwreck to be imputed to the pilot?

We think not.

His plan of battle was, all confess, a masterpiece. To march straight to the center of the allies' line, pierce the enemy, cut them in two, push the British half upon Hal and the Prussian half upon Tongres, make of Wellington

and Blucher two fragments, carry Mont St. Jean, seize Brussels, throw the Germans into the Rhine, and the English into the sea. All this, for Napoleon, was in this battle. What would follow anybody can see..

Those who would get a clear idea of the battle of Waterloo have only to lay down upon the ground in their mind a capital A. The left stroke of the A is the road from Nivelles, the right stroke is the road from Genappe the cross of the A is the sunken road from Ohain to Braine-l'Alleud. The top of the A is Mont St. Jean, Wellington is there; the left hand lower point is Hougomont, Reille with Jerome Bonaparte's there; the right-lower point is La Belle Alliance, Napoleon is there. A little below the point where the cross of the A meets, and cuts the right stroke is La Haie Sainte. At the middle of this cross is the precise point where the final battle word was spoken. There the lion is placed, the involuntary symbol of the supreme heroism of the imperial guard.

The triangle contained at the top of the A between the two strokes and the cross is the plateau of Mont St. Jean. The struggle for this Plateau was the whole of the battle.

The wings of the two armies extended to the right

and the left of the two roads from Genappe and from Nivelles; D'Erlon being opposite Picton, Reille opposite Hill.

Behind the point of the A, behind The plateau of Mont St. Jean is the forest of Soignes.

As to the plain itself we must imagine a vast undulating country each wave commanding the next and these undulations rising toward Mont St. Jean are there bounded by the forest.

Two hostile armies upon the field of battle are two wrestlers. Their arms are locked, each seekd to throw the other. They grasp at every aid; a thicket is a point of support; a corner of a wall is a brace for the shoulder; for lack of a few sheds to lean upon a regiment loses its footing; a depression in the plain, a movement of the soil, a convenient cross path, a wood, a ravine, may catch the heel of this colossus which is called an army and prevent him from falling. He who leaves the field ^{is} beaten. Hence, for the responsible chief the necessity of examining the smallest tuft of trees and appreciating the slightest detail of contour.

Both generalshad carefully studied the plain of Mont St. Jean, now called the plain of Waterloo. Already in the preceding year Wellington, with the sagacity of pre-

science, had examined it as a possible site for a great battle. On this ground and for this contest Wellington had the favorable side, Napoleon the unfavorable. The English army was above, the French army below.

The battle was commenced with fury, more fury, perhaps, than the emperor would have wished, by the left wing of the French at Hougomont. At the same time Napoleon attacked the center by hurling the brigade of Quoit upon Ia Haie Sainte, and Ney pushed the right wing of the French against the left wing of the English which rested upon Papelotte.

The attack upon Hougomont was partly a feint; to draw Wellington that way, to make him incline to the left; this was the plan. This plan would have succeeded, had not the four companies of the English Guard and the brave Belgians of Perponcher's division resolutely held the position, enabling Wellington, instead of massing his forces upon that point, to limit himself to reenforcing them only by four additional companies of guards and a Brunswick battalion.

The attack of the French right wing upon Papelotte was intended to overwhelm the English left, cut the Brussels road, bar the passage of the Prussian, should they come, to carry Mont St, Jean, drive back Wellington upon Hougomont, from whence upon Braine l'Alleud; from

thence upon Hal; nothing is clearer. With the exception of a few incidents, this attack succeeded. Papelotte was taken; La Haie Sainte was carried.

After the capture of La Haie Sainte, the battle wavered.

Toward 4 o'clock the situation of the English army was serious. The Prince of Orange commanded the center, Hill the right wing, Picton on the left wing. The Prince of Orange desperate and intrepid, cried to the Hollando-Belgians: "Nassau! never retreat!" Hill, exhausted had fallen back upon Wellington. Picton was dead. At the very moment that the English had taken from the French the colors of the 105th of the line, the French had killed him. Picton by a ball through the head. For Wellington the battle had two points of support Hougomont and La Haie Sainte; Hougomont yielding, La Haie Sainte taken, there was but one knot left, the center. That still held. Wellington re-enforced it. He called thither Hill, who was at Merbe Braine; and Chasse, who was at Braine l'Alleud.

The center of the English army, slightly concave, very dense and very compact, held a strong position. It occupied the plateau of Mont St. Jean, with the village behind it and in front the declivity, which at that time was steep. At the rear it rested on a strong stone house, then an outlying property of Nivelles, which marks the intersection

of the roads, a sixteenth century pile so solid that the balls ricocheted against it without injuring it. All about the plateau the English had cut away the hedges here and there, made embrasures in the hawthorns, thrust the mouths of cannon between two branches, made loop-holes in the thickets. Their artillery was in ambush under the shrubbery. The puny labor, undoubtedly fair in war, which allows snares, was so well done that Haxo sent by the emperor at 9 o'clock in the morning to reconnoiter the enemy's batteries, saw nothing of it and returned to tell Napoleon that there was no obstacle except the two barricades across the Nivelles and Genappe roads. It was the season when grain is at its height; upon the verge of the plateau a battalion of Kempt's brigade the 95th armed with carbines, was lying in the tall wheat.

Thus supported and protected, the center of the Anglo-Dutch army was well situated.

The danger of this position was the forest of Soignes then contiguous to the battlefield and separated from it by two ponds. An army could ^{not} retreat there without being routed, regiments would have been lost in the swamp. A retreat according to the opinion of many military men contested by others, it is true, would have been an utter rout.

Wellington anxious, but impassible, was on horseback and remained there the whole day in the same attitude, a little in front of the old mill of Mont St. Jean which is still standing under an elm which an Englishman, an enthusiastic vandal, has since bought for 200 francs cut down and carried away. Wellington was frigidly heroic. The balls rained down. His aide-de-camp Gordon had just fallen at his side. Lord Hill showing him a bursting shell said: "My Lord, what are your instructions, and what orders do you leave us if you allow yourself to be killed?" "To follow my example, answered Wellington. To Clinton he said laconically: "Hold this spot to the last man." The day was clearly going badly. Wellington cried to his old companions of Talavera, Vittoria and Salamanca: "Boys we must not be beat; what would they say of us in England?"

About 4 o'clock the English line staggered backward. All at once only the artillery and the sharpshooters were seen on the crest of the plateau. The rest disappeared; the regiments driven by the shells and bullets of the French fell back into the valley now crossed by the cowpaths of the farm of Mont St. Jean a retrograde movement took place, the battle front of the English was slipping away, Wellington gave ground. "Beginning retreat", cried Napoleon.

sure of the event he encouraged with a smile as they passed before him the company of sappers of the first corps which he had designated to erect barricades in Mont St. Jean as soon as the village was carried. All this serenity was disturbed by but a word of haughty pity; on seeing massed at his left, at a place where today there is a great tomb, those wonderful Scotch Grays with their superb horses he said: "It is a pity."

Then he mounted his horse, rode forward from Rossomme and chose for his point of view a narrow grassy ridge at the right of the road from Genappe to Brussels, which was his second station during the battle. The third station that of 7 o'clock between La Belle Alliance and LaHale Saints is terrible; it is a considerable hill which can still be seen and behind which the guard was massed in a depression of the plain. Along the crest of the plateau of Mont St. Jean ran a sort of a ditch which could not possibly have been suspected by a distant observer.

What was this ditch? We will tell. Braine l'Alleud is a village, Ohain is another. These villages, both hidden by the curving of the ground are connected by a road about four miles long which crosses an undulating plain often burying itself in the hills like a furrow, so that at certain points it is a ravine. In 1815, as

now, this road cut the crest of the plateau of Mont St. Jean between the two roads from Genappe and Nivelles. That road was, and is still, a trench for the greater part of its length; a trench in some parts a dozen feet deep the slopes of which are so steep as to slide down here and there, especially in the winter.

On the day of the battle, this sunken road, of which nothing gave warning, along the crest of Mont St. Jean, a ditch at the summit of the escarpment, a trench concealed by the ground, was invisible, that is to say, terrible.

At the moment that Wellington drew back Napoleon started up. He saw the summit of Mont St. Jean suddenly laid bare and the front of the English army disappear. It rallied, but kept concealed. The emperor half rose in his stirrups. The flash of victory passed into his eyes.

Wellington hurled back on the forest of Soignes and destroyed; that was the final overthrow of England by France; it was Cressy, Pointiers, Malplaquet and Ramillies avenged. The man of Marengo was wiping out Agincourt. Turning abruptly he sent off a courier at full speed to Paris to announce that the battle was won.

Napoleon was one of those geniuses who rule the thunder. He had found his thunderbolt.

He ordered Milhaud's cuirassiers to carry the plateau of Mont St, Jean. They were 3,500. They formed a line of half a mile. They were gigantic men on colossal horses. They were twenty- six squadrons. They wore casques without plumes and cuirasses of wrought iron, with horse- pistols in their holsters and long saber-swords. In the morning they had been the admiration of the whole army, when at 9 o'clock, with trumpets sounding, and all the bands playing, they came, in heavy columns, one of their batteries on their flank the other at their center and deployed in two ranks between the Genappe road and Frischamont and took their position of battle in this powerful second line, so wisely made up by Napoleon, which, having at its extreme left the cuirassiers of Milhaud, had, so to speak two wings of iron.

Aide- de- camp Bernard brought them the emperor's order. Ney drew his sword and placed himself at the head. The enormous squadrons began to move.

Then was seen a fearful sight.

All this cavalry with sabers drawn, banners waving and trumpets sounding, formed in column by divisions, descended with an even movement and as one man, with the precision of

a brass battering-ram opening a breach, the hill of La Belle Alliance, sank into the formidable depth where so many men had already fallen, disappeared in the smoke, then rising from this valley of shadows appeared on the other side, still compact and serried, mounting at full trot, through a cloud of grape emptying itself upon them, the frightful acclivity of mud of the plateau of MontSt. Jean. They rose, serious, menacing imperturbable; in the intervals of the musketry and artillery could be heard the sound of this colossal tramp. Being in two divisions, they formed two columns; Wathier's division had the right, Delord's the left. From a distance they would be taken for two immense serpents of steel stretching themselves toward the crest of the plateau. That ran through the battle like a prodigy.

An odd numerical coincidence, twenty-six battalions were to receive these twenty-six squadrons. Behind the crest of the plateau, under cover of the masked battery, the English formed in thirteen squares, two battalions to the square, and upon two lines, seven on the first and six on the second, with muskets to their shoulder, and eye upon their sights, waiting calm, silent and immovable. They could not see the cuirassiers, and the cuirassiers could not see them. They listened to the rising of this tide of

men. They heard the increasing sound of 3,000 horses, the alternate and measured striking of their hoofs at full trot, the rattling of cuirasses, the clicking of sabers, and a sort of fierce roar of the coming host. There was a moment of fearful silence, then, suddenly, a long line of raised arms brandishing sabers appeared above the crest, with casques, trumpets and standards, and 3,000 faces with gray mustaches, crying: "Vive l'Empereur!" All this cavalry debouched on the plateau, and it was like the beginning of an earthquake.

All at once, tragic to relate, at the left of the English, and on our right, the head of the column of cuirassiers reared with a frightful clamor. Arriving at the culminating point of the crest, unmanageable, full of fury, and bent upon the extermination of the squares and cannons, the cuirassiers saw between themselves and the English a ditch, a grave. It was the sunken road of Chain.

It was a frightful moment. There was the ravine, unlooked for, yawning at the very feet of the horses two fathoms deep between its double slopes. The second rank pushed in the first, the third pushed in the second; the horses reared, threw themselves over, fell upon their backs, and struggled with their feet in the air, piling up and overturning their riders; now power to retreat; the whole

column was nothing but a projectile. The force acquired to crush the English crushed the French. The inexorable ravine could not yield until it was filled; riders and horses rolled in together pell mell, grinding each other, making common flesh in this dreadful gulf, and when this grave was full of living men the rest marched over them and passed on. Almost a third of the Dubois' brigade sank into this abyss.

Here the loss of the battle began."

This selection is most famous as a description. It is a masterpiece in the handling of details, in its vividness and clearness. It is not only a literary gem but it deals with an incident so important in history that it must grip the attention of the historian.

The selection may be studied from a literary standpoint or from an historical standpoint. It may be studied with a view of making maps of the battlefield at different stages of the battle and it may be studied by a teacher who would endeavor to approach it from the standpoint of literature and of history. Here are four distinct angles from which the selection may be approached. Consequently it offers opportunity for preparation with a multiplicity of purposes.

Since the problem of the second experiment as well as of the first is a problem in Educational Psychology, it was decided to use the class in Educational Psychology at the University of Kansas. The class was composed of Juniors and Seniors in the School of Education. The class was similar to the one used in the first experiment. There were several students in the Educational Psychology class who were in the History of Education Class used in the first.

In order to disarm the class as to the real nature

of the exercise the instructor read to them instructions which purported to be simply an experiment in connection with their work.

The directions were written and read so that there might be a complete history of the directions and a check for future investigation. The directions are as follows:

"Instead of a regular assignment for Wednesday I am going to ask you to take a laboratory assignment for tomorrow and no special preparation will be required for Wednesday.

The assignment for tomorrow will be as follows:

In the seminar room at the librarian's desk you will find an envelope like this for each of you (show envelope). This envelope contains an assignment and directions for its preparation. These envelopes are now in the seminar room and you may call for yours when convenient. The assignment is to ^{be} prepared at the library between the hours of 8 A.M. and 6 P. M. You may take as much time as you please for the preparation but be sure to keep accurate count of the time used. When you have finished your preparation sign your name and record the time spent. Then return the envelope and the material it contains to the librarian.

Tomorrow afternoon, Tuesday, please report at this room with a quiz book which you will need in completing the exercise.

You may come at 1:30--2:30--3:30--or 4:30 at your convenience. The work here will take probably more than an hour therefore you should come at such time that you will have two hours together if possible.

The directions on the envelope are as follows: (Read from the envelope)

The Directions on the Envelope.

"The enclosed piece of work is a laboratory exercise in Educational Psychology and its value depends upon the care with which you follow instructions.

This assignment is to be prepared at the Library and no where else between the hours of 8:00 A.M. and 6:00 P.M. Please keep accurate record of the time spent in the preparation of the assignment. You must not show your preparation to any one or talk of the assignment to any one. You may use any other means you please in studying and preparing the lesson. When you have finished your preparation, sign your name, record the time spent in the preparation and hand to the Librarian, Education Seminar. Further directions are inside the envelope

Name _____ Time Spent in Minutes _____

We expect to get some valuable results from this piece of work and you are urged to cooperate heartily and follow directions exactly. The exercise has to do with the subject we now have under discussion and you will be pleased with the results for yourself and the class if you cooperate heartily.

I have written these directions so as to have the experiment under as perfect control as possible and hence might have a record of the explanation given you."

Explanations of Directions.

The directions were read to the class by the teacher without comment so that the directions were such as might be given any other class by simply reading the directions to it.

The fact that it was a piece of laboratory work was emphasized so as to get a cooperation and hearty response.

The assignment was to be prepared at the library, so that all would have equal facilities for preparation and less chance for comparisons and communication. The time was to be noted on the envelope so that the effect of purpose on the time spent could be compared. The envelope and its contents were to be left with the librarian to prevent comparisons and discussion. The reason discussion was guarded against was to keep a single purpose at work. The time between 8:00 a.m. and 6:00 P.M. was for the purpose of having the preparation when all the maps, books, encyclopedia and other reference work were accessible and might be used. This was to test the effect of purpose on preparation.

After choosing the selection, the class, the time and the place for the experiment there yet remained the problem of dividing the class into groups and assigning each group a purpose for preparation.

It was necessary that the groups be nearly equal in size and scholarship and that the student of no group know the purpose of students of other groups.

To accomplish both these ends mimeographed copies of the selection were placed in the envelopes, one for each member of the class. Since there were to be four purposes of preparation, directions for each of the four purposes were prepared. In each one-fourth of the envelopes containing the selection, a copy of one of the four purposes was placed and the envelopes sealed. The envelopes were then thoroughly shuffled and left at the Librarian's desk. When the students came to make their preparation they drew an envelope. Since the students were to write their names on the envelopes and the envelopes had been secretly marked to distinguish the different purposes the class was divided into four groups by mere chance.

The four purposes are as follows:

- I. Prepare this selection as you would an assignment in history.
- II. Prepare this assignment as you would a lesson in

English laying special emphasis on the descriptions.

III. Study this selection with the view of being able to draw maps of the battlefield at different stages of the battle.

IV. Study this selection with the view of being able to teach it to a high school class in English or History.

In addition to the assignment the following directions were placed in the envelopes.

Directions.

This piece of work is a laboratory exercise in Educational Psychology and will count as class work. The credit depends on how well you carry out instructions as well as your success in the recitation that follows the preparation.

The selection for study is taken from Cosette in Hugo's *Les Misérables* and is famous for the way in which details are handled. It is to be studied at the Library between the hours of 8:00 A.M. and 6:00 P.M., as indicated below.

Be sure to keep an ACCURATE record of the time spent in preparation. You must not show your preparation to any one or talk of the assignment to any one. You may use any other means you please in preparing the lesson.

When you have finished the preparation put the material that you take out of the envelope back into it, sign your name on the envelope, record the time spent in preparation

and hand to the Librarian of the Educational Seminar."

It is to be noted that in the case of this examination the material assigned for preparation is so different from the material in the Courses of Education that the student could not interpret the kind of preparation necessary to please the teacher in terms of previous requirements but had to depend entirely upon the explicit instructions found in the envelope.

However it might be said that the class in Educational Psychology was at this time discussing the nature of the study process and memory and in some results it was plainly evident that the students had tried to interpret the purpose of the instruction by laying particular stress on the method of learning them under discussion, as for example the part-whole method of memory.

It might be questioned whether or not the direction "Prepare this selection as you would a lesson in history or lesson in literature laying special stress on the descriptions" constituted vitally different approaches the values sought are very different from those sought in historical investigation and every student who has had grade, high school and college history and literature must have learned that there is a real and vital difference.

Like-wise there is a real and vital difference of approach between that of a mere student of history and literature and the teacher of the same subject. And there is also a far different attitude of approach from either of the others if the purpose is to be able to draw maps at different stages of the battle.

Will these differences of purpose affect the result

in the test proposed? The results of the experiment must answer.

According to directions the class appeared for the test proposed. The test was divided in two parts. The preliminary questions were for the purpose of comparing the effects of different directions on the study process and also to make sure that the students were conscious of the directions given them for the preparation of the assignment.

The preliminary test was as follows:

Please answer the following carefully:

I. Name _____

II.(a) Give in detail, step by step, what you did in preparing this lesson. (b) To what books did you refer, if to any? (c) What questions would you like to have answered for you to thoroughly complete your preparation?

III. Reproduce the directions you were given in the assignment.

IV. Indicate your major and minor in the college.

Question I asked for the name only to identify the papers. It was thought that II,(a) might reveal some differences of approach by different groups, or at least a suggestion of an affect. For example we might expect that

the students who had been directed to draw maps would draw more maps than any of the other groups.

It was thought that in II (b) there would be brought out a marked difference in reference to books consulted and thoroughness in the study of different parts.

II(c) was included because it was thought that the questions the students might ask would reveal their grasp of ^{the} subject. If the questions were mere superficial question or trivial in their character it would show a different grasp than if the questions were of fundamental facts.

Number III was given to determine whether or not the students had remembered the purpose as stated in the assignment. If they did not remember the assignment of course there could be but little purpose in the preparation but if the assignment were remembered then there was at least a chance for the purpose to direct selection and emphasis of values.

Number IV was given so as to enable possible peculiarities in results to be checked to the influence of previous work.

When the students finished the preliminary test it was handed in and the following quiz covering the subject matter of the assignment was given out.

See note below.

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Questions.

1. Describe minutely the battlefield of Waterloo at the beginning of the battle, locating the principal places and the more important officers with their commands.

(b) Give the details of the metaphor of the two wrestlers. Justify its use.

2.(a) What was Napoleon's usual method of attack in battle?

(b) Give in detail his plans for the battle of Waterloo.

3.(a) Draw a map of the battlefield of Waterloo at the opening of the battle showing the location of the towns, physical features and the more important officers with their commands.

(b)(I) Draw a map showing the same details at the close of this selection.

(2) In what direction was the English army from the French army? How did you learn this fact?

(3) Name all the advantages and disadvantages for the English in the battle of Waterloo.

(4)(a) In what country is the battlefield of Waterloo?

(b) Locate the lion and tell what it signifies.

(c) Who were the allies in the battle of Waterloo?

5.(a) Describe Napoleon's "Thunderbolt" as it got into action.

(b) Describe the most dramatic moment of the battle

6. Answer briefly.

(a) How were the cuirassiers armed?

(b) How many cannon had each side?

(c) How deep was the sunken road?

(d) What odd numerical coincidence is mentioned?

(e) What previous French defeats would have been paid back by a French victory at Waterloo?

(f) How were the English lines formed to receive the last charge of the French?

(g) What yours are mentioned as marking three stages in the battle?

(h) Mention four figures of speech found in this selection.

Note:

It is extremely important to ^{the} investigator that he should know which of your answers or parts of answers depend upon previous knowledge rather than upon this special preparation, therefore you are asked to take much care and enclose in brackets in every case the former.

It is understood that you may not be able to

answer all the questions and possibly not more than half of them but you are expected to answer as many as you possibly can and as fully as possible.

After the quiz the first information checked up was from that recorded on the outside of the envelopes. The students had recorded the time used in preparation and from this it might be determined whether or not a difference in purpose would have any relation to time spent. The following summary gives the average time spent by each group, the average deviation of each group from the average time spent and the coefficient of variability.

Group	Ave. time in min.	Ave. deviation in min.	Coefficient of variability
I	84.8	24.3	35.9
II	87.2	20.6	29.6
III	85.5	26.3	38.5
IV	82.9	18.9	28.7

It is to be noted that there is a time variation between the averages for the longest and shortest of 4.3 minutes. Group II spent 5% more time in preparation than group IV, group III spent 3% more time than group IV and group I spent 2.3% more.

Group III was more variable in the time of prep-

paration than any of the other groups while group IV with the lowest average time spent has the smallest variation. Group II with the highest average time of preparation has second place in coefficient of variability.

The differences in purpose do not seem to have had a marked effect on the time spent in preparation.

The results show that on the average all the groups spent the greater part of two hours counting time of coming and going from the library. This is the time usually spent in preparing a lesson, no doubt and the results probably show the effects of habit in time spent preparing a lesson rather than the effects of the purpose in the assignment.

The next information checked up was that obtained from the preliminary quiz. The following summary gives the number in each group who did their work in the same way.

	I	II	III	IV
Read directions before proceeding	7	9	12	7
First Reading superficial	5	9	8	6
First " " intensive	8	4	5	6
Further Reading as a whole	9	8	6	5
" " " " in parts	6	10	11	6
Made an outline of selection	3	0	0	3
Took notes	5	4	2	3

Made a map	8	12	11	6
Had questions to ask	0	0	0	3
Consulted reference books	3	0	3	2
" " maps	3	0	3	1
" " no reference book, map	9	10	10	11
Looked up words	1	5	1	2
Those that stated purpose clearly	10	14	10	12
Could not state purpose	4	1	4	0
Number in each group	14	15	14	12

The following from an answer to Number **II** and **III** of the preliminary quiz illustrates the type of answers given as to the method of study.

In preparing this lesson:-

"First I read the entire assignment to get a general outline of what it was about, then I read it again more carefully-- drawing a map to show the location of the points of the battles and takings notes upon it. I also looked up the meaning of words that I did not understand. After I had studied it ~~a~~carefully. I glanced through it about twice to fix some points in my mind.

Directions in assignment.

Read the Battle of Waterloo taken from Hugo's, Les Miserables, Study it as you would a lesson in English. Speak to no one about it. Record the time spent upon the lesson."

Almost all of the students were conscious of the steps in the study process and of the assignment in their preparation.

It may be noted that the class laid emphasis on the part-whole method of studying the selection. In explanation it should be said that in the Educational Psychology class they had just finished a discussion of the part-whole method of study and a large number in the class surmised that the experiment was to test their application of the method to the study of this selection.

It may be farther noted that fewer in group III, which was directed to study the selection with a view of being able to draw maps, said they drew maps in their preparation than in group II, which studied the selection as a lesson in English. It is also noticeable that so few consulted reference books or maps. This may be explained in terms of limited time.

There were only three out of the fifty-five in the class who stated definitely that they were not prepared and wished to ask questions.

84% of all the students stated definitely the purpose assigned in the envelope while 16% failed to state the purpose. Because these failed to state their

purpose however does not prove that they did not notice it in their preparation but the evidence is against such notice.

The provisions made in the directions that the students should have two hours together for the test secured to each student all the time he wanted in which to write.

The note referred to at the beginning of the test had a double purpose. First, its purpose was to encourage every student to do his best without regard as to whether it was much or little. It was intended that the test would be searching enough that few could easy make a perfect score. In fact an easy test that all can answer gives no basis of comparison. The test should try the mettle of the best and this gives place for ranking the class.

The second part of the note endeavors to find out what facts are not the result of this particular preparation, i.e. what facts were previously known to the student. It was found on checking the results that a few had read the selection when they were High School pupils but only in the most cursory way, consequently the students were on the same foot footing in this particular preparation.

We have thus minutely followed the details of method because it is necessary to know the technique before an intelligent criticism can be made of an experiment.

Section V.

Scoring, Analysis and Results of the Second Experiment,

With all the preliminaries out of the way the next problems are those of analyzing and scoring the test.

In the problem of scoring it must be determined, in this experiment as in the first, whether or not all the questions shall be considered of equal value.

It would seem that questions could be so made that obviously one question would involve more thought and show more study than another. The answer required by one question might be two, three or more times longer than another but in assigning different values to different questions the subjective element of the scorer is the factor that determines what values shall be assigned and hence there is a difficulty in arriving at an agreement as to values to be assigned.

In making out the questions for the present experiment the author tried to so frame the questions that the answers would be of approximately the same value hence in scoring, each question will be scored on the same basis.

Since there are six questions each would be worth on the basis of 100%, $16 \frac{2}{3}\%$. When there are parts to the question the $16 \frac{2}{3}\%$ would be broken up into small fractional parts of $16 \frac{2}{3}\%$ and be cumbersome to handle.

In this experiment as in the first the desire is to compare performances of the group on each part and not necessarily on the whole test hence any arbitrary value may be given to each question and part, provided the same basis is maintained throughout. We shall then assign 100 points to each question and the parts of each question will be considered of equal value and give their proportional parts of 100. The total possible score on the whole test is 600 points and 100 points is the highest possible score on the answers to a single question. More-over the whole score or any part of it may be reduced to the basis of 100% by dividing by six since the method suggested multiplies by six every score on the basis of 100% x We shall next proceed to the problem of analysis.

The analysis of the questions is for the purpose of securing a basis of scoring and consequent comparisons.

The more minute the analysis the more easy it is to apply absolute mathematical exactness to the grading. So long as much is left to the subjective impressions made by the answers upon the one who scores there is no exact basis for scoring. If, however, every phase of the answers can be reduced to numbers, locations, and definite units or standards, the scoring then becomes mechanical.

This condition is necessary in all scoring and measuring of educational products if there is to be a uniform standard of work accomplished. As long as standards are merely subjective no one knows what they are and comparisons of results among different groups becomes impossible. The Courtis test in arithmetic, the Kelley silent reading test, the Ayer's scales of handwriting etc. are all attempts to formulate standards which are objective and hence, results are comparable. A minute analysis of the questions will furnish such an objective standard for grading the questions in this test.

The following is a minute analysis of the questions with the value assigned to each part:

The first question has two parts. The first part asks for a description while the second part asks for the details and justification of the figure of speech.

I a. Description of the battle of Waterloo Points 50

1. Vividness, Hugo's description the model 10

2. Location of ten important places: Nivelles

Genappe, Mont St. Jean, Hougomont, La

Belle Alliance, La Haie Sainte, Forest of

Soignes, Papelotte, Chain, Hal.

3. Name and locate ten generals.. 10

Wellington, Reille, Jerome Bonaparte

Napoleon, D'Erlon, Picton, Hill, Ney, Quot,

Milhaud.

4. Skill in handling details, Hugo's the

model;... 10

undulations of the plain, brush, grain,

the ditch stone house.

5. Clear conception of the relative location

of all details..... 10.

1 b. Give in detail the metaphor and justify: 50

(a) Details 25

Two armies are like two wrestlers.

1. Arms locked 5

2. Grasp at every aid 5

3. Seek to throw each other 5

4. Points of support: 5

thicket, wall, sheds, depressions, path
wood, ravine.

5. He who leaves is beaten 5

(b) Justification of comparisons: 25.

1. Each is a contest. 5

2. Much depends on the outcome. 5

3. There is strategy in both. 5

4. Each may profit by the mistakes of the other. 5

5. Tremendous strength manifest in both 5

This question belongs to group II the English group since it deals with description and figures of speech. It will be interesting to notice in how far the drawing of the maps by group III will correlate with this question.

Question II is in two parts. The first part asks for Napoleon's usual methods of attacking an enemy and the second part asks for a detailed outline of this particular attack.

II a. Napoleon's usual method of attack: 50

1. Treat the strategy of the opponent
as a citidel and batter it to a breach. 10

2. Overwhelm the weak points with grape. 10

3. Join and resolve battles with cannon. 10

4. Make marksmanship his genius	10
5. Strike, strike, strike	10
b. The plans for Waterloo	50
1. March straight to the center of the allies lines	10
2. Pierce the enemy's lines	10
3. Cut them in two	10
4. Throw the English into the sea.	10
5. Throw the Germans into the Rhine.	10

Question number two asks concerning points of special historical interest and consequently belongs to group I, the history group.

Question III consists of two parts. The first part asks for a map showing the location of six towns, physical features and the more important officers with their generals at the beginning of the battle. The second part asks; (1) for the same details at the close of the battle, (2) the direction of the English army from the French and (3) the advantages and disadvantages for the English in the battle.

III a. Draw a map at the beginning of the battle of Waterloo. 50

1. Locating six towns 17.

Brain l'Allend, Chain, Monut, St. Jean,
Hongemont, La Haie Sinite, La Belle Alliance.

2. Physical features, six: 17.

Platear of Mont. St. Jean, Forest of Soignes,
sunken road, hills wheat field, road to Genappe and Nivelles.

3. Commanders with commands, eight: 16.

Wellington, Hill, Prince of Orange, Picton Napoleon,
Reille, Jerome Bonaparte, D'Erlon Ney, Milhaud.

B. Other details;

1. Map showing 8 generals at close of selection 17.

Wellington, hill, Prince of Orange, Picton, Napoleon,
Reille, Jerome Bonaparte, D'Erlon Ney, Milhaud.

2. The direction of the English from the French 17.

3. Advantages and disadvantages to the English. 16.

Advantages: choice of position, elevation,
sunken road, Chateau, rain, topography known.

Disadvantages: fewer cannon, mixed troops,
swamp, defensive.

In question III the advantages should be to group III, those directed to prepare to draw maps. Here again is a chance to see whether there is a correlation between I and III. Question IV has three parts, all asking for very definite information. The first part asks for the location of Waterloo. It is not answered in the text and consequently must be answered by inference or from a reference source, part second asks with reference to the lion and is very briefly referred to in the assignment. The third part asks who the allies were. This may be partly answered from inference but to be fully answered would require outside references.

IV a. Waterloo is in Belgium 33 1/3

b. The lion 33 1/3

1. Location 16 2/3

2. Significance 16 2/3

c. Name the five allies 33 1/3.

Russia, Prussia, England, Sweden, Austria.

This question tests the effects of purpose on the preparation since most of the material for the answers must be gotten out side the text.

Question V has two parts both of which at first sight would suggest that they are description and belong to group II, the English group, but a closer analysis reveals the fact that they call for memory of minute details. The first part asks for a description of "The Thunderbolt" as it got into action. The second part asks for a description of the most dramatic moment in the battle.

V.s. Describe the Thunderbolt:	50
1. Recognition of the Thunderbolt.	10
2. Number composing.	10
3. Description of men and horses.	10
4. Prestige of the command, Pride.	
of France.	10
5. Charge, down the valley and up	
the hill.	10
b. Describe the most dramatic moment:	50
1. Recognition of the moment.	10
2. Description of ^{waiting} English.	10
3. Description of sounds.	10
4. The French appear over the crest.	10
5. The plunge into the ditch.	10

Here is given opportunity for memory, imagination and judgment. The question calls for visual, auditory and kinaesthetic imagery and consequently gives opportunity for different types of mind to function.

Question VI has eight parts, each part calls for the memory of rather minute details. It is given to test the difference in performance in the various groups.

VI.A. How were the Curassiers armed? $12\frac{1}{2}$

1. Casques-- $31/8$
2. Curasses $331/8$
3. Pistols $31/8$
4. Short Sabers $31/8$

B. How many cannon had each side? $12\frac{1}{2}$

1. English $159-6\frac{1}{4}$
2. French $240-6\frac{1}{4}$

C. How deep was the sunken road? $12\frac{1}{2}$

1. Twelve feet or two fathoms.

D. What odd numerical coincidence is mentioned? $12\frac{1}{2}$

1. 26 squares to meet 26 squadrons $12\frac{1}{2}$

E. What previous French defeats would have been paid back by a French victory? $12\frac{1}{2}$

1. Cressy- $2\frac{1}{2}$
2. Pointiers $2\frac{1}{2}$
3. Malplaquet - $2\frac{1}{2}$
4. Ramilles - $2\frac{1}{2}$
5. Agincourt - $2\frac{1}{2}$

F. How were the English lines formed to meet the last charge of the French $12\frac{1}{2}$

1. Thirteen squares $6\frac{1}{4}$
2. Two battalions to the square $6\frac{1}{4}$

G. What hours are mentioned as marking three stages in the battle? $12\frac{1}{2}$

1. 11:30 Beginning. 4 1/6
2. 4:00 English retreat. 4 1/6
3. 7:00 French defeat. 4 1/6

H. Mention four figures of speech found in this selection.
12 1/2

1. Pointing out four. 6 1/4
2. Naming. 6 1/4

Representative Answer to Questions.

The following answer~~s~~s have been selected from the paper to show how the student answer the questions.

These questions were scored 70-90-85-80-90-82.5

respectively or 497.5 total out of a possible score of 600 points. The author judged that these answer were about 5/6 perfect on the average.

IV. (a) The battlefield of Waterloo can be clearly pictured as a letter A. The left stroke of the letter is the road from Nevelle, the right stroke the road from Genappe. The apex of the letter is the town of Mont St. Jean. The cross piece of the letter is the suken road from Chain to l'Alleud. The lower end of the left extremity of the letter was La Belle Alliance. Here was Napoleon. Wellington was situated at Mont St. Jean. Just below where the cross

piece cuts the right stroke is La Haie Sainte. Back of the point where Mont St. Jean was situated lay the Forest of Soignes, separated from the battlefield by two ponds. The triangle just above the cross piece formed the plateau of Mont St. Jean. the main battle ground.

I.(b) Two armies are as two wrestler, locked in each other arms, a stonewall against which to lean, a thicket for support, a depression in the ground, which might catch the heel of one wrestler, a great army. All these served to help or put one or the other of the wrestlers at a disadvantage.

I think this a fine metaphor. It gives the reader a clear picture of two men wrestling which makes more real the great struggle between two armies (Scored 70 out of a possible 100)

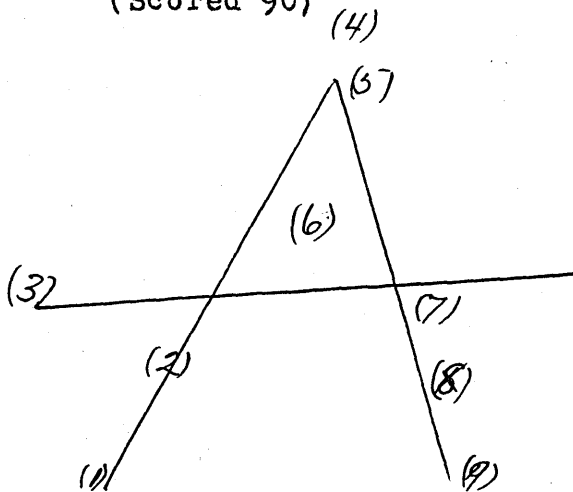
II. (a) Napoleon attacked mainly through his cannon. He struck, struck, struck until he battered down the defense of the enemy. He worked through projectiles.

(b). His plan for the battle of Waterloo was in general to make an attack upon the allies, to cut them, sending the English to the left, the Prussians to the right, take Mont St. Jean, take Brussels, throw the Germans into the river, the English into the sea. In

particular they planned first to attack Hougemont, more as a feint to draw Wellington away from Monte St. Jean. Then he was to take La Haie Sainte, Monte St. Jean and advance to Brussels. The road was to be cut off from the Prussians should they decide to come.

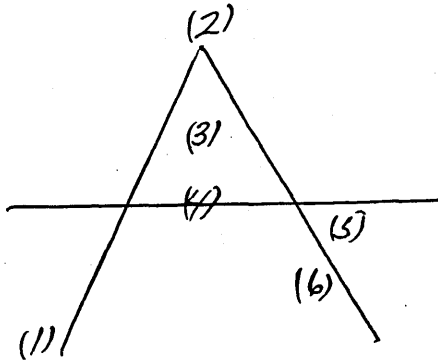
(Scored 90)

III. A.



1. Hougomont, Reille and Jerome Bonaparte here.
2. Road from Neville.
3. Ohain.
4. Forest of Soignes.
5. Village of Soignes.
6. Plateau of Monte St. Jean.
7. La Haie Sainte.
8. Road from Genappe.
9. La Belle Alliance-Napoleon here,

III, B. I.



1. Hougomont occupied by the French.
2. Wellington.
3. Hill and the Prince of Orange.
4. French cuirassiers have just crossed the sunken road.
5. La Haie Sainte taken by the French.
6. Napoleon.

(2) / The English army was northwest of the French army.

I reasoned this out because Napoleon's plan was to push one wing into the Rhine and one into the Channel, I did not have time to go to the history seminar for a map.

(3). The English had the advantage because they were up higher, and could watch the French army.

Also the English could hide in the high wheat and bushes and wait for the French without being seen. They did this very well.

They were at a disadvantage however if they were forced to retreat to the forest of Soignes because the

forest was dense and full of swamps and no army could stay intact there. The fact that it rained the night before was an advantage to the English because it made it impossible for Napoleon to use his artillery until the ground had dried and in this way gave Blucher time to come up. The sunken road was another advantage for the English.

(Scored 85)

IV.(a). (The battle field of Waterloo is in Belgium)

(That in brackets was known before this study)

(b). The lion is located in the middle of the cross of the A. It signifies the last stand of the Imperial Guard.

(c). The allies were the English, the Dutch under Prince of Orange and I believe the Prussians under Blucher.

(Scored 80)

V. (a) Wellington's forces were retreating. They were out of sight, so Napoleon sent his "Thunderbolt", the Milhaud Cuirassiers to, attack Mont St. Jean and take the town. They were 5500 men on horseback with plumeless casques, iron armor and long swords, They were 26 squadrons divided into two divisions. Ney was leading.

As they started off they looked like two metal serpents.
 (b). As they went down into the smoke and then came upon the other side climbing the muddy slope, hidden by the first slope and the brush the English waited, hearing the tramp of 3000 horses. They appeared above the slope, when suddenly at the very cul/mination of the slope they came upon a ditch, a grave. The first line reared but the second pushed the first in, the third the second and, until the ditch was full of horses and men vainly struggling it could not be stopped. Only one third of the cu/rassiers passed over the sunken road of Ohain.

(Scored 90)

VI. (a) Plumeless casques, iron armor, long swords, and pistols was the armor of the cuirassiers.

b English 159.

French 240.

c. 12 feet in parts

d. There were 26 squadrons of the French cuirassiers and there were 26 battalions of the English waiting them.

e. Erecy,

f. The English lines were formed in thirteen squares, seven in front and six behind.

g. 11:30 Beginning

4:00 Wellington sorely ha/rased.

4:30 The sunken road of Ohain.

H.

1. Simile.

2. Metaphor.

3. The use of the word "grave" for the sunken road,
as that is what it eventually is. I can't think
of the names of one figure of speech." (score 82)

In the process of scoring, each question was scored through the whole set of answers before the next question was scored and the quiz books were not sorted into their groups until the scoring was completed consequently the conditions were as favorable as possible for non-biased and non-influenced scoring.

When all the books had been graded they were sorted into groups, the results tabulated and averages for the various groups found.

The averages for the various groups in each question are given below in points made and also the total number of points. The possible score was 600 points. The last column gives the results in percent.

Group	I	II	III	IV	V	VI	Total	%
I History	39.3	(50.7)	44.1	(35.2)	36.8	(47.8)	(253.4)	42.2
II English	(43.9)	36.7	45.5	23.3	37.3	47.5	233.5	38.9
III Map	38.1	30.7	(50.2)	33.1	(39.3)	40.6	232	38.7
IV Teachers	38.	43.3	39.	29.9	35.	47.	232.5	38.7

The first question lays emphasis on the description and the metaphor. It was expected that group II would do best on the question because they were directed to "Prepare this assignment as you would a lesson in English, laying special stress on the descriptions". It will be noted that group II averaged 11.8% higher than the next highest at the same time the other three groups varied only 1.3%.

The second question deals with material which is of historical interest. It was expected that if the assignment had an effect on the selection and emphasis of values group I would do the best. They had been directed to "Prepare this assignment as you would a lesson in History". The results show that group I averaged 12.5% higher than the next highest.

There is a much larger variation in the grades in question Number II. The lowest mark is 20% below the

highest. The lowest grade is in group III which laid emphasis on map drawing. It would seem that the directions had influenced the work of the group to a considerable extent because the directions would naturally lead group III to neglect just such material as that in question II.

Question III asks for the drawing of a map showing different stages of the battle and it was expected that group III would do the better than any other group because group III ^{was} directed to "Study this selection with the view of being able to draw maps of the battlefield at different stages of the battle". The results show that group III averaged 10.3% higher than the next highest while those who had laid most emphasis on description scored second, thus showing the correlation between questions III and I.

Question IV deals almost entirely with material suggested in the selection but not given there. It would be necessary to do some reading outside the selection to get the answers and the question was so framed to test whether the purpose would influence such outside investigation. The question lays stress on the historical phases and exact locations.

The results show a wide variation in performance. Group I and II did the best. Group II averaged 33.8% below group I while group IV averaged 15.1% below group I. Why group I should have scored higher than the others does not appear in the students reports of their own study process since only three reported that they had used reference books. However the material in the question is just such as would arrest the attention of the student of history and evidently the purpose in the preparation caused the group to think through the situations and thus come better prepared for the answers than the others.

On the face of question V, it would be taken as a question in description and consequently group II would be expected to succeed best but a closer analysis of the question shows that the question calls for the location and action of certain parts of the army. In reality then the question asks for locations and group III would be expected to do best, which it does. The drawing of the maps in group III shows its effects in the scores. The variations in the scores by groups is quite constant.

Question VI calls for a mass of details such as any reader might or might not remember. The answers

are largely matters of memory of ~~striking~~^{ing} or interesting facts. An analysis of the question indicates that the question is largely of historical interest and is just such material as would miss group III if the purpose had any effect on the study process.

The results show that group III was low while the other groups were not far a part.

On the whole score it will be noted that group I received 20 more points than its nearest competitor group II, while II-III and IV receive practically the same score.

It will be farther noted that group IV did not get first place in any question and first place in only seven parts of answers while group I got first place in 23 parts of answers, yet group IV came out third in the final score and differed from both II and III by less than .1%. More over the variation of group IV from the mean performance of the whole was .74 while group III, I, and II varied .88, .94 and 1.04 respectively. The work of group IV was the most regular because the direction of "Prepare the selection to teach it," fails to emphasize any particular phase and thus leaves the individual to ^adead level of preparation, but fails to emphasize any phase. These

results are ~~in~~identical with the results in the first test in which the teachers fail to make the highest achievements in many parts but has a good total.

The following chart gives the scores in detail for the various groups in each question and part question and the graphes show the same results in more stri/king form.

This tabulation shows the performance of the various groups in the whole and the parts of each question.

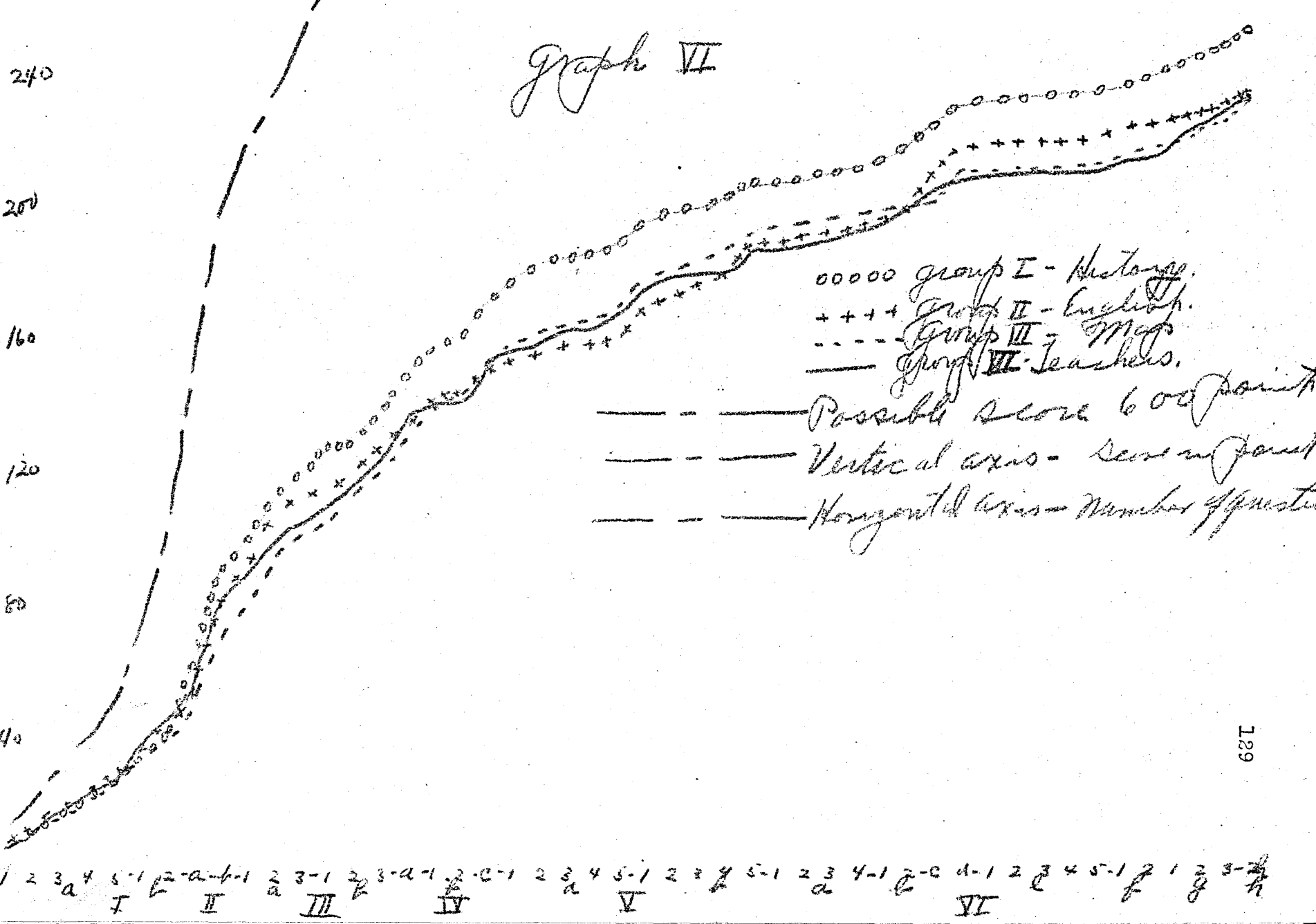
Analysis	*	I	II	III	IV	Ave
I-a. Description of the battlefield	50	26.4	27.9	24.6	24.5	25.8
1. Vividness-Hugo's the model	10	4.9	5.8	4.6	5.6	5.2
2. Locate 10 important places	10	5.9	6.3	5.6	4.6	5.6
3. Name and locate 10 generals	10	4.5	4.3	4.4	4.2	4.4
4. Skill in handling details	10	4.8	5.6	4.6	4.8	5.0
5. Clear conception relative location of all details--a-	10	5.9	5.9	5.3	5.1	5.6
b. Give in detail the metaphor of the wrestlers and justify-----	50	12.9	16.0	13.6	13.8	14.1
1a) Details compared--(See p. 107, I, b, (a))	25	6.8	9.3	8.9	9.2	8.6
(b) Justification of the metaphor--(See p. 108, I, b, (b))	25	6.1	6.7	4.6	4.6	5.5
Total score for I-----	100	39.3	43.9	38.1	38.0	39.8
=====						
II-a. Napoleon's usual method of attack--(See p. 108, II, a-	50	23.6	10.7	11.4	19.2	16.2
b-The plan for Waterloo, (See p. 109, II, b-	50	27.1	26.0	19.3	24.2	24.2
Total score for II	100	50.7	36.7	30.7	43.4	40.4
=====						
III-a. Draw a map at the beginning of the battle(p.109, III, a-):	50	27.6	31.0	30.8	22.2	27.9
1. Locating six towns	17	8.1	11.1	9.6	6.4	8.8
2. Locating six physical features	17	12.6	14.1	15.4	10.8	13.2
3. Locating eight generals	16	6.9	5.9	5.9	5.0	5.9
b, Further details	50	16.5	14.5	19.2	16.8	16.8
1. Locate 8 generals at close	17	2.7	1.3	3.9	0.3	2.1
2. Direction English from French	17	6.1	6.8	8.5	7.1	7.1
3. 8 advantages and disadvantages of the English	16	7.7	6.4	6.9	6.7	6.9
Total score for III	100	44.1	45.5	50.2	39.0	44.7
=====						
IV-a. In what country is Waterloo-	33	14.3	6.6	9.5	13.9	11.1
b. The lion:						
1. Location	17	8.3	7.8	9.5	4.2	7.5
2. Significance	17	1.2	2.2	3.6	1.4	2.1
c. Name the Allies	33	11.4	6.6	10.4	10.5	9.7
Total score for IV	100	35.2	23.3	33.1	29.9	30.4
=====						

* Possible score on the question.

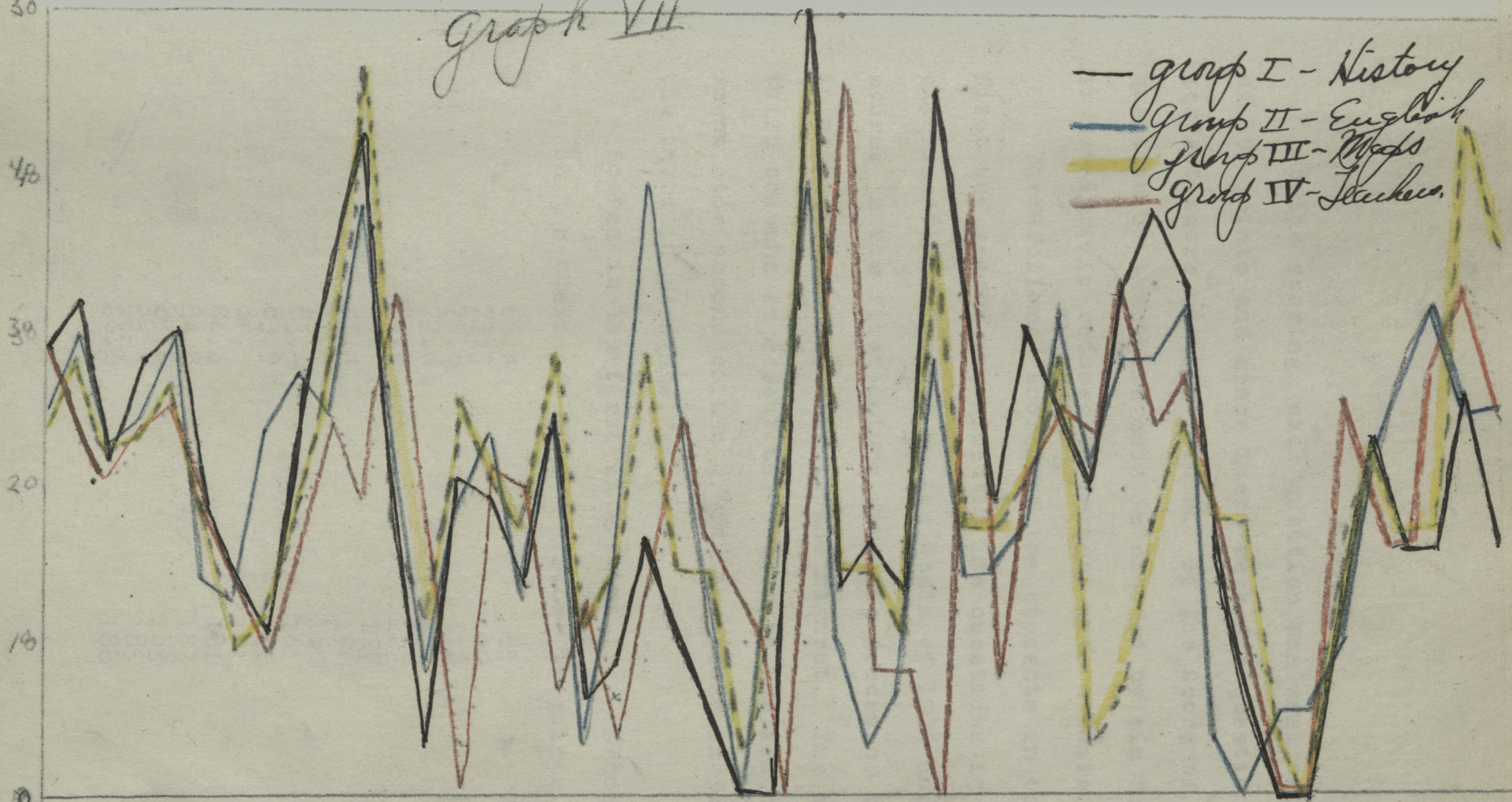
Analysis (continued)

	*	I	II	III	IV	Ave
V-a. The Thunderbolt, Description, (See p.112,V,a)	50	18.9	9.3	15.0	15.0	14.6
b. The most dramatic moment, de- scription-(See p.112,V,b-)	50	17.9	28.0	24.3	20.0	22.6
Total score for V.	100	36.8	37.3	39.3	35.0	37.1
For details of VI,a,b,c,d,e,f,g,h, see p.114.						
VI,a-How were the curassiers armed?	12.5	4.9	6.3	5.4	5.0	5.4
b-How many cannon had each?	12.5	6.3	6.7	1.3	7.8	5.5
c-How deep was the sunken road?	12.5	7.1	9.2	4.5	6.3	6.8
d-What odd numerica coinciden?	12.5	8.0	8.3	6.2	6.8	7.3
e-What previous French defeats would have been paid?	12.5	1.4	1.7	2.7	2.3	2.0
f-How were the English lines formed to receive the French?	12.5	6.3	5.0	4.9	4.7	5.2
g-What hours are mentioned as marking three stages?	12.5	8.4	5.0	8.0	7.0	7.1
h-Mention four figures of speech	12.5	5.4	5.4	7.6	7.3	6.4
Total Score for VI.	100	47.8	47.5	40.6	47.0	45.7

Graph VI



Graph VII



This graph shows every part of a question reduced to the basis 50 points and shows the performance of each group on every part of a question.

$\frac{1}{1} \frac{2}{a} \frac{3}{4} \frac{5}{1} \frac{6}{2} \frac{7}{a} \frac{8}{b} \frac{9}{1} \frac{10}{2} \frac{11}{3} \frac{12}{1} \frac{13}{x} \frac{14}{3} \frac{15}{9} \frac{16}{4} \frac{17}{2} \frac{18}{c} \frac{19}{1} \frac{20}{2} \frac{21}{3^*} \frac{22}{4} \frac{23}{5} \frac{24}{1} \frac{25}{2} \frac{26}{3} \frac{27}{4} \frac{28}{5} \frac{29}{1} \frac{30}{2} \frac{31}{3} \frac{32}{4} \frac{33}{1} \frac{34}{2} \frac{35}{c} \frac{36}{d} \frac{37}{1} \frac{38}{2} \frac{39}{3} \frac{40}{4} \frac{41}{5} \frac{42}{1} \frac{43}{2} \frac{44}{3}$

In the scoring, each question was assigned a value of 100 points and since there were six questions a perfect score was 600 points. If the score of any question or the whole quiz is divided by six the score is immediately reduced to percent with a basis of 100%.

There follows scores of the students in both the first and second experiment. The questions in the first experiment were graded on the basis of 100% and the scores in the first column give the grades on that basis in order from the lowest to the highest. The second and third columns represent the scores in the second experiment, the second column giving the score in points, the third in percents.

Scores in the first experiment.	Second experiment	
on the basis of 100%.	Score in points	Score in %.

66.4	85	14.1
73.3	102	17.
75.8	118	19.6
77.6	123	20.5
79.2	127	21.1
80.	127	21.1
81.4	156	26.
81.6	160	26.6
83.4	161	26.6
83.9	161	26.6
84.	171	28.5
84.6	181	30.1
84.8	183	30.5
85.6	183	30.5
86.5	185	30.8
86.5	188	31.3

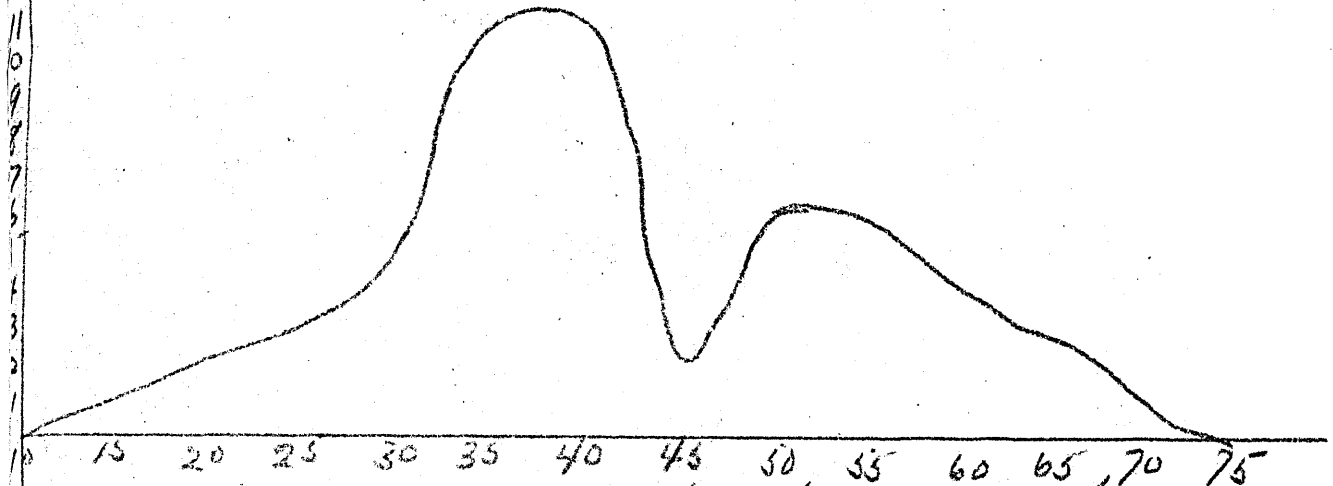
87.4	195	32.5
87.4	197	32.8
87.9	199	33.1
88.	201	33.5
88.3	203	33.8
88.5	209	34.8
88.9	213	35.5
89.	217	36.1
89.7	219	36.5
90.7	219	36.5
91.	221	36.8
91.1	226	37.6
91.6	228	38.
92.8	231	38.5
93.5	233	38.8
93.7	234	39.
95.4	235	39.1
97.3	247	41.1
99.	262	43.6
	276	46.
	283	47.1
	286	47.6
	286	47.6
	292	48.6
	292	48.6
	301	50.1
	301	50.1
	303	50.5
	323	53.8
	328	54.6
	329	54.8
	333	55.5
	339	56.5
	341	56.8
	357	59.5
	360	60.
	361	60.1
	385	64.1
	402	67.

The scores in the first experiment range from 66.4% to 99% while in the second experiment the range is from 14.1% to 67%. This difference is to be explained

on the basis of the fact that the first experiment was a quiz over work done in the class and graded as ordinary class work while in the second experiment the quiz was over new material that had not been presented in the class.

Moreover the basis of grading in the first experiment was on the basis of a class exercise while the second was on the basis of perfection.

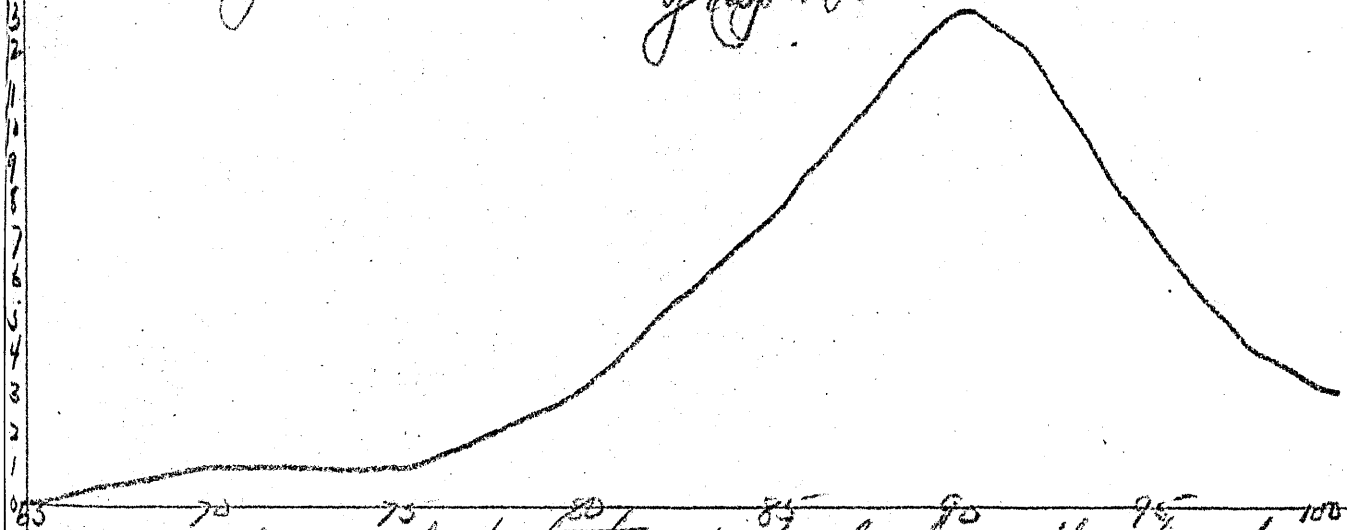
The following graphs show the distribution of students in groups of 5%.



Curve showing the distribution of students in the second experiment in groups of 5%.

The vertical axis shows the groups of students.
The horizontal axis shows the grades in percent.

Graph IX



Curve showing distribution of students in the first experiment in groups of 5%.

Axes as in VIII

graphs VI and VII show the difference of performance of the groups on each question. We wish to show also the differences in performances of individuals.

In order to do this we shall show how the students were distributed in this performance both by groups and in the whole number. To do this requires a minute analysis of a part of a question and a comparison of the numbers who performed in a certain way in a given part. We shall use I a, with its five parts as illustrative.

The question I-a asks for a description of the battle field of Waterloo locating the important places and the generals with their commands.

Such a description must contain the following points:

- (1) Vividness
- (2) Location of ten places
- (3) Location of ten generals with their commands.
- (4) Skill in handling details.
- (5) Clear conception of the relative location of all details.

Each of these points were graded on a scale of 10 and if we show in each part the number of students

who made each of different 10 points we shall have shown how individuals differ in their performance when they have had the same material and the same opportunity for study.

The following tables show this distribution. The figures in each square shows the number of students who made the grade shown at the top of the column. For example in I-a-1, four students in group I received zero, two in group II, two in group III and none in group IV, i.e; a total of eight received zero on I-a-1. An examination of all the tables shows the wide variation in the performance of students. Graph number XIX shows the distribution of all the students in the class in their performance.

The horizontal axis shows the scores from 0 to 10 while the vertical axis shows the numbers of students in groups of from 0 to 10. The possible score on each is 10.

In grading the answers to I a. no definite formula was required. The answers were graded successively from five different standpoints and in each case Hugo's description was taken as a model i.e, Hugo's description was taken as a standard and used, as the Hilligas scale for grading compositions, is used.

An inspection of the distribution of students shows a wide range of individual differences. While it is the effects of education on the individual that is the ultimate end to be observed, yet it is only in the tendencies of the mass that is revealed the tendency produced by a given purpose.

The variability of results and the individual differences can best be shown by the following tabulation. This tabulation shows the distribution of students in each part of Ia. The possible score in each part is 10.

Group		Number of students in each score group.										
Score-		0:	1:	2:	3:	4:	5:	6:	7:	8:	9:	10:
I-a-1	I	4:	0:	0:	0:	1:	2:	1:	2:	2:	1:	1:
	II	2:	0:	0:	2:	1:	0:	2:	2:	3:	3:	0:
	III	2:	1:	1:	0:	2:	1:	2:	3:	2:	0:	0:
	IV	0:	0:	2:	0:	1:	2:	3:	1:	3:	0:	0:
	Total	8:	1:	3:	2:	5:	5:	8:	8:	10:	4:	1:
I-a-2	I	0:	1:	4:	0:	0:	0:	1:	1:	3:	3:	1:
	II	0:	0:	0:	3:	1:	1:	1:	4:	2:	3:	0:
	III	1:	0:	1:	2:	0:	1:	3:	3:	1:	1:	1:
	IV	1:	1:	1:	3:	0:	1:	1:	1:	2:	1:	0:
	Total	2:	2:	6:	8:	1:	3:	6:	9:	8:	8:	2:
I-a-3	I	0:	1:	2:	1:	0:	4:	3:	2:	1:	0:	0:
	II	0:	0:	2:	3:	4:	2:	3:	1:	0:	0:	0:
	III	0:	1:	1:	4:	2:	1:	3:	1:	0:	1:	0:
	IV	0:	0:	4:	2:	0:	3:	2:	1:	1:	0:	0:
	Total	0:	2:	9:	10:	6:	10:	11:	5:	2:	1:	0:
I-a-4	I	3:	0:	0:	3:	1:	0:	2:	0:	3:	2:	0:
	II	2:	0:	0:	1:	3:	2:	1:	0:	2:	3:	1:
	III	3:	0:	1:	2:	0:	1:	2:	1:	4:	0:	0:
	IV	0:	0:	3:	1:	2:	2:	0:	1:	3:	0:	0:
	Total	8:	0:	4:	7:	6:	5:	5:	2:	12:	5:	1:
I-a-5	I	0:	0:	2:	1:	1:	1:	2:	3:	3:	0:	1:
	II	0:	0:	0:	3:	1:	3:	2:	1:	3:	2:	0:
	III	0:	1:	1:	2:	1:	1:	4:	1:	2:	1:	0:
	IV	1:	1:	2:	0:	1:	1:	0:	1:	5:	0:	0:
	Total	1:	2:	5:	6:	4:	5:	8:	6:	13:	4:	1:
I Score-		5:	10:	15:	20:	25:	30:	35:	40:	45:	50:	55:
Total	I	1:	1:	0:	2:	3:	0:	20:	4:	1:	0:	0:
	II	0:	0:	2:	2:	1:	2:	2:	4:	1:	0:	0:
	III	0:	1:	3:	2:	1:	1:	3:	2:	0:	0:	0:
	IV	0:	1:	2:	3:	1:	1:	1:	2:	1:	0:	0:
	Total	1:	3:	7:	9:	6:	4:	8:	12:	3:	0:	0:

graph X

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I.a.1.

I.a.2.

I.a.3.

I.a.4.

I.a.5.

Total.
Whole of I.a.

These graphs show the average scores of the
Whole Class for the first half of the first question
Vertical axis = Number of Students; Horizontal = Score.

The fact that the students were required to report the time spent in preparation gives an opportunity to investigate the effects of purpose on preparation. When the time used in preparation by the students had been tabulated and compared with the scores made, little correlation was found. The longest time reported as used was 171 minutes and a score of 283 points was made by that student.

The shortest time reported was 35 minutes with a score of 339. The next longest time was 150 minutes with a score of 181 while the second shortest time was 44 minutes with a score of 102. When the index of correlation between time spent and scores is worked out it is found that the correlation is .13 Spearman coefficient or .20 Pearson coefficient which means that the correlation is low and that there is little relation between time spent and results obtained. The average time spent by the class was 83.4 minutes.

The average time spent by each group and the corresponding average score follows:

	Time	Score
I	84.1	253.4
II	81.2	233.5
III	85.5	232.
IV	82.9	232.5

Section VI

Conclusion.

This investigation was begun with the hypothesis that a vocational motive is a tremendous influence in the study process. That the vocational motive not only gives impetus and enthusiasm in study but that it acts as an organizing core around which all the powers and information developed by the study process arrange themselves. It was thought that if the student had chosen his vocation then his memory would retain best that which touches his vocation. It was thought that the vocational motive would cause the selection and emphasis of material studied in such a way that the material would function better in the life of the individual than material learned without such a motive. It was thought that unconsciously the student would assimilate what fitted into his vocational scheme.

The results of the first experiment over turns this hypothesis. The results show that in a course of History of Education there is no appreciable difference in the values secured or in the selection and emphasis of material because of a difference in

vocational choices. In this particular course the vocational⁸¹ motive had no perceptible effect as a selective factor in determining what the student would emphasize and remember. Rather the students had emphasized what the instructor and the text books had emphasized without reference to the nature of the subject matter.

The students took the course evidently because they had faith that the material would function.

The class mark seems to be the immediate incentive because a high mark means that the student has done what the teacher expected him to do. The student seems to have confidence that the teacher knows what is best to be done and willingly follows his leadership.

If the teacher does not have definitely in mind the end toward which the pupil should move and does not make the pupil conscious of this end but rather has in mind a multiplicity of ends because there are in the class numbers that represent many ends and thus emphasizes with equal strength every phase of the subject then the student will lay equal emphasis

upon every phase and pass in the examination with the same mark every phase of the subject that has been emphasized by the teacher.

The results of the second experiment show that whenever a motive is set up and the students explicitly made conscious of their motives there immediately results a difference in selection and emphasis of material even though the motive be stated in rather general terms. If the motive had been made more explicit and the requirements of the teacher's more definite the differences would have stood out more distinctly. While the first experiment proves in a negative way the effect of the teacher's requirements as compared with the effects of a vocational motive the second experiment shows directly that the pupil is as clay in the hands of the teachers to direct in a definite direction or in no direction.

If the teacher feels that to merely cover so much of the course of study in a perfunctory way secures definite results, the data secured in this investigation will show him the waste and tragedy of such procedure.

The schools are now enlarging their curricula and admitting vocational subjects because it is hoped that the vocational subjects will motivate

the school work. Vocational subjects will not motivate the work of the school unless the teacher of those subjects knows the ends toward which they need to drive. Agriculture, Manual training, Domestic art and science, commercial subjects and all other vocational subjects must be taught by those who know the ends desirable and then set up such requirements for the students as will lead him to those ends.

Of course a mere quiz cannot reach the fundamental ambitions that causes the student to choose certain subjects in the school curriculum nor the motive that holds him to his task through months and years of toil and labor. The main spring back of such effort is an ambition to be something or to do something. The student in whom this ambition is strong will study any subject even though distasteful to him if he believes, that particular subject lies in his road to achieving the purpose which he has set before him. Students who believe the school is the road to success and who have an ambition, stay in school and master what the teacher requires and what ever subjects are offered to them but students

in whom ambition is low or in whom the seed of doubt, that the school is the road to success, has been sown, drop out, whatever subjects^{are} offered. To keep the boys and girls in school there must be an ambition implanted in the pupils' minds to do something or to be something. The pupil and his parents must be made to feel that the school is the road that must be traveled to reach the desired end.

The vocational motive is no doubt the strongest motive in an ambition to drive the student on but the requirements of the teacher fixes the selection and emphasis of values from the material offered the child for his mental growth.

The relation between certain subjects and the vocation is so intimate that little argument is needed to convince the student that he should master the material. Other subjects are so remotely related to the vocational that it is almost impossible to explain the relation to the uninitiated

It takes no argument to convince the student that shorthand, typewriting and bookkeeping are prerequisites to certain office activities but it is a different problem when the teacher tries to explain the relation between algebra or latin and the ordinary vocations. But if the student is once made to feel the need of any subject he will proceed to master it in the manner required by the teacher.

The results of these experiments have shown the tremendous effects of the teacher's requirements.

This throws back upon the teacher important responsibilities; first to arouse the ambitions of the student and second to be wise in offering to the child that which will function in his life. The pupil need not know what his ultimate aim will be but he must have an ambition to be something. The teacher needs to know the ultimate end of the pupil in order that his requirements be such as to lead the pupil to the organization of material in such a way that it will function in his future life. The big factor in the process of selection and emphasis of values by the pupil is the requirements made by the teacher.